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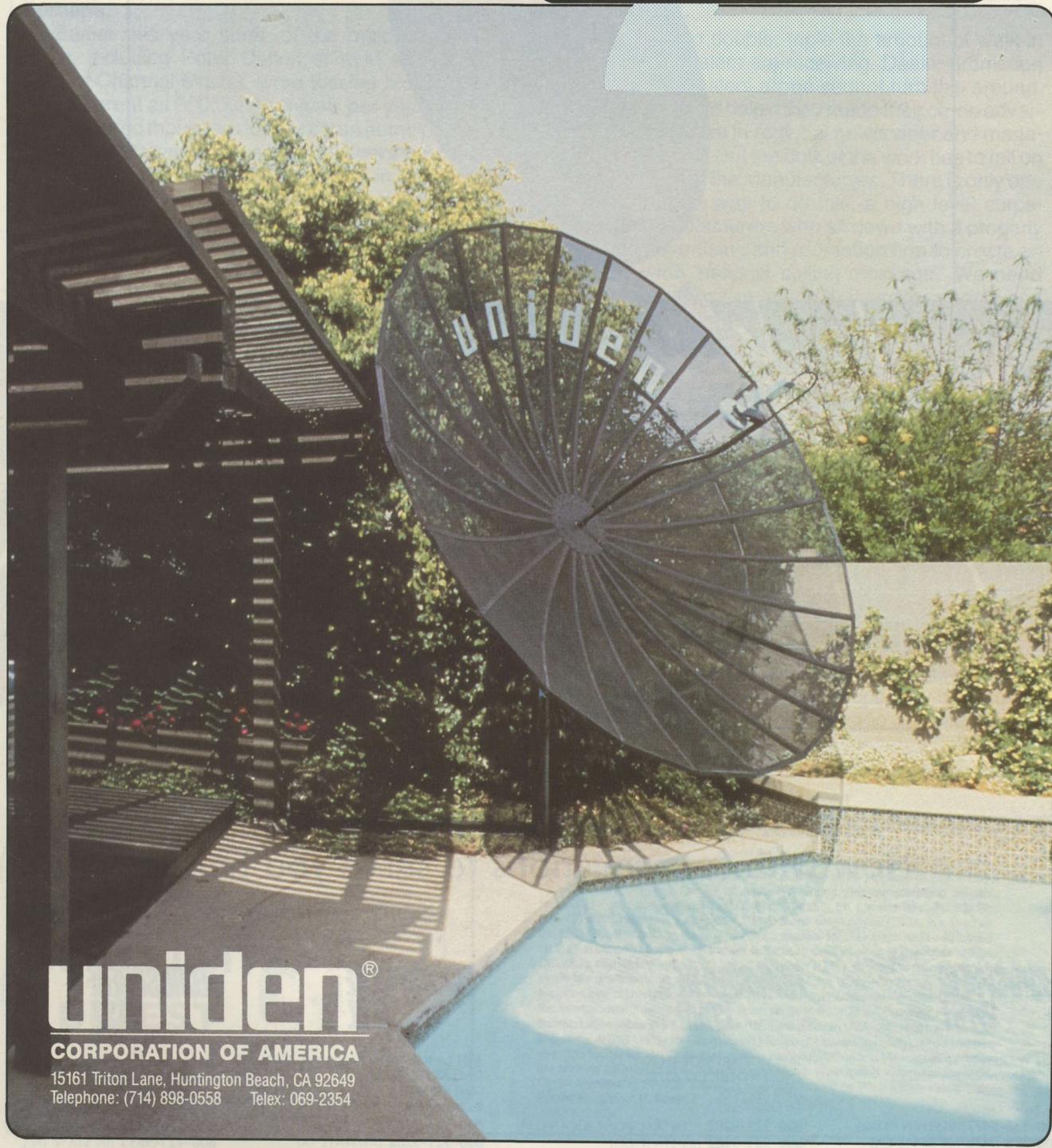
• FIBERGLASS 2/ Dehnert + Odom

• M/A-Com vs. HBO Battle

THE TWICE PER MONTH BUSINESS JOURNAL OF TVRO

**COOP'S
SATELLITE
DIGEST**

NOVEMBER 15, 1984



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NOVEMBER 15, 1984

SELLING Opportunities

This has not been a good fall selling season. The retail marketplace has not responded as many had anticipated. If your individual dealership is running 'at capacity,' you either are very fortunate or you simply did not have the same projections in mind as many others. Perhaps, maybe, we have run through the fall in the 30,000/35,000 systems **per month** region. **Perhaps.**

Earlier this year some of the major marketing types, including Peter Dalton of KLM and Donald Berg of Channel Master, were tossing around numbers as great as 600,000 terminals per year in 1984. If six hundred thousand doesn't come home properly, that is 50,000 terminals per month; **every month**, for 12 months. We had several months in the 20,000 systems realm earlier this year, and ramped close to 30,000 in May just before the summer doldrums set in. The handwriting was on the wall at that time; to catch up to the forecasted 600,000 per year number before the year was over, we would have had to hit close to 100,000 in a single month in September/October/November. We did not of course; missing it by a wide margin.

It has been my belief for more than a year that our biggest problem as an industry is a lack of **consumer awareness**. The average person does not know about TVRO, or if they think they know, they do not understand the real attraction of what we have to offer. Clearly, I believe, we need to be making a direct effort to tell our story to the consumers.

Uniden is trying. They are into a consumer education program by placing advertisements for home TVRO systems in publications consumers routinely read; **Sports Illustrated**, for example. But one advertisement from one firm is not going to properly acquaint millions of potential users with TVRO. Nor can one firm be expected to pick up 'the tab' for an entire industry.

Public awareness; the art of telling people our story. How do we do it? Who does it benefit?

- 1) We, **as an industry**, make people more aware of our service by engaging as an industry in a well planned, carefully conceived public information program.
- 2) We, **as an industry**, benefit because as more and more consumers become aware of what we offer, they will seek out their neighborhood TVRO dealers to study system costs and benefits.

We need to double, triple the amount of walk-in trade which dealers are receiving. Dealer promotion will help; but dealers **alone** cannot turn this around. Distributors could help if they made their co-op advertising dollars work in regional newspaper and magazine advertising. But the bulk of the work has to fall on the shoulders of the manufacturers. There is only one common sense way to do this; a high level corps-group of manufacturers who sit down with a properly qualified advertising and promotion firm to create an industry-wide 'national selling message.' **We need an image**; a positive image that excites people and sends them into their local dealers to find out more.

Let's talk dollars. Say we did or do 300,000 terminals in 1984. If someplace between OEM and consumer a **\$10.00 per-terminal advertising charge** was worked in, we'd have \$3,000,000 to work with. Wisely spent, we'd reach between 8,000,000 and 20,000,000 new, potential users of TVRO with that 'image campaign.' The message would be 'ours'; it would say **what** we wanted said, **where** we wanted it said, **when** we wanted it said.

There will be many arguments about 'where' the advertising charge gets worked in; whether it comes out of the OEM share, the distributor share, or the dealer share. I'd like to suggest that it be split, but charged one time 'up front.' At the OEM level so we have the easiest possible way to collect it.

SPACE should do this; I hope they do, soon. If they don't, there is nothing to stop an independent

MID-Month Comments/ continues page 30

**COOP'S
SATELLITE
DIGEST**
/2



CSD/2—Coop's Satellite Digest is published twice per month by West Indies Video, Ltd., a Turks and Caicos Corporation with corporate offices located at Grace Bay, Providenciales, Turks & Caicos Islands, BWI. **Sales and subscription offices** located at Fort Lauderdale, Fl. (P.O. Box 100858, Ft. Lauderdale, Fl. 33310; 305-771-0505 between 9 AM and 4 PM eastern, weekdays). CSD/2 is issued on the 15th of each month as the mid-month companion to CSD which has been issued on the 1st of each month since the home TVRO industry began in October of 1979. **CSD/2 is combined with CSD** for all domestic (U.S.) subscriptions and is also **available optionally** for CSD readers outside of the USA. Additionally, CSD/2 is provided free of charge as a membership service to all 'Dealer Members of SPACE,' the international trade association, upon request from SPACE dealer members. **Subscription rates** are \$75 per year (US funds) within USA (24 issues annually), \$85 per year (US funds) for Canada and Mexico (24 issues annually), and \$100 per year (US funds) for TVRO dealers outside of the USA/Canada/Mexico. **ALL** copies are sent via **AIR**mail to all worldwide destinations. West Indies Video is a 'Pioneer Dealer Member' of SPACE. CSD/2 is copyright 1984 © by West Indies Video, Ltd., Robert B., Susan T., Kevin P. and Tasha A. Cooper.



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DISTRIBUTOR Reports

AMERICAN TELEVISION SYSTEMS, INC. (1955 Midway Dr., Suite C. Twinsburg, Oh. 44087; 216/425-7000) has a new 10,000 square foot warehouse facility with 'drive-in service' to distribute CATV, SMATV and MATV equipment. ATS has been operational since 1980 providing turnkey headends for distribution systems.

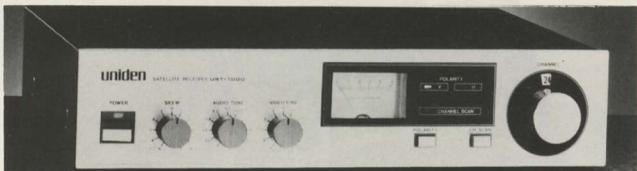
BANKS SATELLITE (906 Montague Ave., Greenwood, SC 29646; 803/229-4630) has become distribution center for the State of South Carolina for all Intersat products. Banks is handling the Baby-Q, IQ-160, as well as the Challenger-11 antenna.

BROOKS SATELLITE, INC. of Aberdeen, New Jersey is moving rapidly to fulfill its commitment to establish a nationwide (plus) chain of franchised satellite system stores over the next 15 months. In rapid succession, Brooks announces the opening of 'Brooks . . . The Satellite Store' facilities in Fort Myers, Florida (October 20; a 3,000 square foot facility), Aberdeen, New Jersey (October 27th; a 1,600 square foot facility), Nassau, the Bahamas (late November), Fairfield/New Haven, Connecticut ('fall' with two showrooms), New Orleans (early November), Corpus Christi, Texas ('fall') and Pittsburgh (area) in February. Each center has full servicing facilities and equipment and most will be handling Hitachi audio and video products in addition to the Brooks line of TVRO hardware. Brooks has targeted the opening of 100 stores during 1985.

C.L. BLUE SYSTEMS, LIMITED (1350 Richmond Avenue E., Brandon, Manitoba; 800/862-6302) is a new branch office of the Saskatoon headquartered TVRO distributor. Blue opened the Manitoba office to respond to the rapidly growing marketplace for TVRO products in the Province of Manitoba.

DELSTAR SYSTEMS, INC. has opened a new warehouse and office facility at 4418 Centergate in San Antonio, Texas. The Houston based firm handles a wide variety of TVRO products including Houston Trackers, Bearcat, Drake, Fanon, Toki, STS, Luxor, Arunta, Avantek, Raydx, Stardish, Odom, DH and their own pre-packaged Delcable line. The San Antonio telephone number is 512/650-9575 and Lance Billman is in charge.

ECHOSPHERE CORPORATION (headquarters at 1925 Dartmouth Ave., Englewood, Co. 80110; 303/761-4782) has announced their affiliation with Uniden Corporation of America to handle the Uniden UST 1000 and the 'upgraded' UST 3000 receivers. This is a departure from previous Uniden distributor appointments, having concentrated previously on smaller, more regional distribution centers.



UNIDEN UST 1000/ In stock at Echosphere

KLM and DRACO SELL

Receiver pioneer **KLM Electronics** and digital-oriented antenna actuator/controller pioneer **Draco Labs** have been purchased by a multi-national corporation headquartered in New England; (the) **R.E. Phelon Corporation**. KLM was majority owned by firm President **Peter Dalton**, and four other stockholders including one of the firm's original founders Mike Stahl (the 'M' in KLM) owned the balance. Draco Labs ownership included **Gus "Sandy" Wirth** who founded Delta Satellite (one of the industry's early distributors) in 1981. The two corporations will operate as 'sister corporations' although each will continue as a separate entity and each will continue with their present manufacturing facilities and locations.

KLM has been experiencing production and service problems for the past six months and their 'share of market' had slipped as a result. KLM's Dalton has been the President of SPACE during that same period of time leading observers to suggest that Dalton's time and efforts have been 'sapped' by the grinding time requirements of the trade association. KLM went through a nervous period late in the summer when a number of creditor/suppliers sought to keep the firm's doors 'open' while a handful of other suppliers were investigating forcing the corporation into involuntary bankruptcy. A group of suppliers formed an informal 'committee' to allow the firm to continue to operate while Dalton and other stockholders worked to find a 'buyer' for their corporation.

DRACO's actuator package went through a difficult period earlier this year but the firm's **Paul Cherry** was able to correct product problems and their dealer acceptance and share of market has been improving steadily in recent months.

While each firm will operate independently, it is likely that some of Draco's 'digital expertise' will rub-off on KLM and future receiver designs from KLM will reflect a move towards digital techniques exchanged from Draco. Dalton's appearance in Dallas as the outgoing President of KLM and SPACE will leave him a 'free agent' and as he remarked to another industry executive "I am looking for something to do."

NEW

PRODUCTS/

SERVICES/

EVENTS

MORE Meshes

BDC's Arrive

FINGER LAKES COMMUNICATIONS, CO. (189 Clark Street, Auburn, New York 13021; 315/252-9478) has been appointed as the exclusive United States representative for the Canadian produced Houssen 4.5 foot TVRO antenna system. The 70 pound dish is packaged with a 65 degree LNA and BDC type receiver which Finger Lakes says should 'retail to the consumer, as a package' for around \$1,500; installation extra.



HOUSSEN + Finger Lakes

NATIONAL COMPUSAT, INC. (P.O. Box 383, Prairie View, Ks. 67664; 913/973-2777; 3239 West Hampden Ave., Englewood, Co. 80110; 303/761-2671) has added the ODOM line of TVRO antennas as well as the recently released Automation Technique UDC-800

remote antenna actuator system.

NATIONAL SATELLITE COMMUNICATIONS, INC. (Clifton Park, N.J. and Orlando, Fl.) will apparently be the first national TVRO distributorship to place consumer advertising in programming guides and consumer magazines. NSC wishes to increase dealer traffic flow from consumers and is expanding their advertising program to increase consumer awareness of TVRO.

PRECISION SATELLITE SYSTEMS (715 Grove St., Clearwater, Fl. 33515; 813/442-0092) has a new 400-item catalog for TVRO dealers. Pricing as well as shipping information is included. Dealers can obtain a copy by calling Precision at 800-HOT-DISH between 8 AM and 6 PM (eastern).

SATELLITE TELEVISION SYSTEMS/SOUTH reports their corporate growth has continued through the fall with a new on-line computerized dealer ordering system first unveiled at the Nashville show. STS of Sandy Springs, S.C. (P.O. Box 668, Hwy. 76 at 803/261-8209) now employs 18 fulltime people after a start-up in 1981 under the leadership of Stephen and Nancy Kaloroplos and 'Bear' Baker. STS South, Inc. (210 N.W. 10th Ave., Gainesville, Fl. 32601; 904/371-7090) was founded in 1980 by Steve and Tressa Rieser and now has 10 full-time employees.

SUNBELT SATELLITE DISTRIBUTORS now has a pair of operating offices; Texas-Sunbelt is located at 357 Exchange Avenue, Arlington (76011; 817/861-5881) while Mississippi-Sunbelt is located at 'East University Avenue,' Oxford, Ms. (38655; 601/236-5517). Product lines include Arunta, AVCOM, Drake, Chaparral, Prodeline, Voyager, Seabreeze (antennas), Draco and Boman.

SATELLITE VIDEO SERVICES, INC. (RR#1, Box 85-S, Paul Saxe Rd., Catskill, New York 12414; 518/678-9581) has expanded their dealer services by adding a pair of toll-free numbers for nationwide service. Dealers should make a notation of 800-528-DISH for outside of New York (state) and 800-831-DISH for within New York.

RECEIVER Supplier Reports

ASTRONIX (822 E. 6th St., Little Rock, Arkansas 72202; 800/372-4800 or 501/372-1005 in Arkansas) notes that their new (at Nashville show) model AX 1000 TVRO receiver is now available nationwide. The new 'basic receiver' interfaces with Polarotor 1, has AFC, 'dial tune' audio and video carriers, and a fine tuning control. The unit is backed with a one year warranty and a 30 day exchange policy. This is a single conversion receiver with a 24 MHz (3 dB) bandwidth and an audio sub-carrier tuning range of 4.8 to 8.2 MHz.

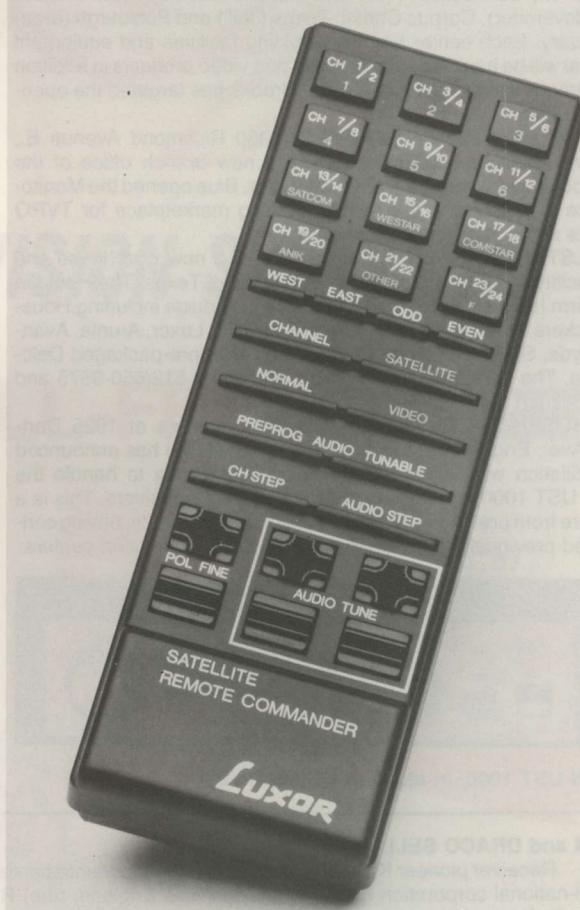
R.L. DRAKE CO. (Miamisburg, Ohio) is launching a national consumer-media advertising program to promote TVRO systems as a consumer concept. The advertising will be timed to appear in publications such as **TV GUIDE** and **TIME**, as well as regional rural and farm-oriented publications, in the 'pre-Christmas' period. Indications are the advertising program will key off of the comparison between paying as much as \$600 per year for a cable service (\$50 per month) versus owning your own 'personal cable system' (i.e. TVRO) for 'under \$2,000.'

ELECTROHOME ELECTRONICS (809 Wellington St. North, Kitchener, Ontario, Canada) has a new satellite receiver designed for the SMATV/cable marketplace. Their model SRM-36 receiver marries a 24 channel agile receiver using frequency synthesis for video and audio tuning to a +62 dBmV output level low, mid, high or superband frequency agile 'modulator.' The modulator is designed for output looping and also employs synthesized tuning.



ANY CHANNEL/ Any Channel Electrohome Combo

LUXOR NORTH AMERICA CORP. (P.O. Box 32, Bellevue, Wa. 98009) is increasing their sales efforts for the Mark 2 block downconversion receiver system. The unit has built-in stereo processing as well as the Dolby noise reduction and has been designed from the start as an integral part of a consumer's home electronics planning. With the BDC approach, multiple receivers can be spotted at many locations in the home or neighborhood. The unit has Infrared control and is planned for integration with home VCRs, audio systems and other consumer electronics pieces. Particular attention has been paid to the multiple audio services that might be received or routed through the unit. Full audio control includes narrow/wideband selection (380 and 180 kHz), 2 to 1 or 1 to 1 audio expander and full remote control tuning from the hand-held remote. The remote system is 'expandable' with a 'remote package' that allows control from rooms other than where the receiver proper is located. The BDC system uses an IF range of 950/1450 MHz. The optional antenna control system is also controlled from the hand-held Infrared remote.



BDC + Hand-held Remote by Luxor

REGENCY ELECTRONICS, INC. (7707 Records Street, Indianapolis, In. 46226; 317/545-4281) has introduced their SR5000; an Infrared remote controlled fully programmable BDC receiver. Polarization skew, satellite position, audio sub-carrier frequencies and tuning voltages are memory-set and can be recalled from either a hand-held remote or from the front panel controls. The receiver's remote also has volume control, video fine tuning, scan or direct channel tuning and a receiver audio mute control. RF or baseband video outputs, with a built-in 'descrambler loop,' is standard. Pricing is \$699.95 (user list).

The Satellite Receiver You've Been Waiting For

Introducing the newest, most advanced remote controlled satellite receiver . . . the Regency SR5000.

We started with the latest in satellite receiver technology, using two microprocessors, block down conversion, and infrared remote control. Then, we topped it off by fitting it into a compact, stylish case of true "set-top" dimensions with a large, easy to read LED display. And that's just for starters.

Two Microprocessors and More

Satellite positioning, polarity, and skew can be programmed and selected automatically. All programmed information is stored in the SR5000's permanent, non-volatile memory. What's more, the Regency receiver features a built-in SAW resonator modulator with channel 2 or 3 output, descrambler loop, signal strength meter, and composite or baseband audio and video outputs. Not to mention the remote control . . .

Full Function Remote Control

Every Regency SR5000 comes complete with a full function infrared wireless remote control that's very easy to operate. It lets you select channels (direct access or slew), select satellite positions,

raise, lower, or mute the volume, and fine tune the picture. All with only 20 keys.

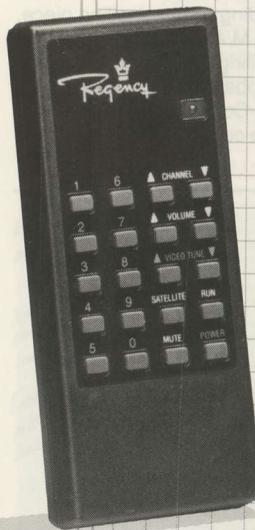
Block Conversion

The SR5000's advanced design employs a block down conversion system so you'll be sure to have the best possible picture year round (The Regency block system is stable within 2MHz from -30 to +60°C). And it's ideal for selling multiple receiver systems.

The Price That Packs a Punch

Now for the good news. The SR5000, with all the features we've described, lists for \$699.95. So your cost will be lower than receivers like the Drake 240, the KLM VIII, or the Luxor 9550. Yet the SR5000 is backed by Regency, a company that's been around since 1947, a company that invented the transistor radio in 1954, a company with an established reputation in consumer electronics. And the company that designed and builds the SR5000 in America.

If this sounds like what you've been waiting for call us for more information or the name of the nearest Regency distributor at 1-800-428-1950.



Regency Electronics Inc. • 7707 Records Street • Indianapolis, IN 46226

M/A-COM / HBO 'STINK' OVER SCRAMBLING

INDUSTRY Confusion

It started with a 'bang' late in October; a plain-looking 9 by 12 white envelope postmarked Salt Lake City was mass-mailed to thousands of dealers and would-be dealers. Inside was a slickly-done four-page piece which contained a two-color reprint that originated in **Coop's Satellite Digest** for June 01, 1984. The reprinted-piece suggested to the reader that 'as an update on HBO scrambling,' only one company in the TVRO receiver field had an 'inside track' on descrambler technology. Readers, dealers largely, read the mailing and many became quite concerned that by not selling M/A-Com TVRO receivers, they might be in the unpleasant position of not being able to offer their retail customers 'scrambling-compatible' TVRO hardware.

The reaction was instant; dealers worried that their Drake or Luxor (et al) receivers could not be equipped for scrambling. OEMs, **who knew better**, were put on the defensive; they were using valuable time trying to convince dealers and distributors that what the mailing 'said' was not true. Some dealers and distributors accepted the explanations; others were not so sure.

Meanwhile, **at HBO**, there was a different type of concern. The mailing clearly stated that because M/A-Com, through their LinkAbit division, was the contractor for the design of the scrambling system, that HBO was in effect 'sanctioning' the M/A-Com 'insider position' for descrambling technology. Numerous OEMs (Amplica, Channel Master, DX, Winegard and many others) called HBO to voice their disapproval for the mailing. In effect, HBO was being accused of 'double-dealing' the receiver manufacturers. It went like this:

- 1) The June CSD "Coop's Comment" focused attention **on the obvious**; because M/A-Com had designed the HBO scrambling system, and because M/A-Com was (to be) under contract to supply the HBO descramblers to the cable headends, M/A-Com had a 'leg up' on the technology required to retrofit TVRO receivers with descrambler interfaces or built-in descramblers.

This was one of those 'early-warning' pieces which **CSD** is so well known for. Coop wrote it to put receiver manufacturers and HBO 'on notice' to a 'possible scenario' which might develop this fall.

- 2) HBO and M/A-Com had reacted to the **June** CSD piece (last summer) by agreeing that M/A-Com would 'share' their descrambler interfacing technology with the balance of the receiver industry. HBO never wanted a sole or single source for descramblers; it served their interests best if **EVERY** receiver manufacturer had 'descrambler compatible' connectors on their receiver units.

M/A-Com's **Jim Bunker** attended the Nashville show early in September to personally oversee the passing out of two-page news releases which explained that M/A-Com was soliciting the joint participation in the descrambler interfacing program of **all** receiver suppliers. That release, **reported in detail in CSD/2 for September 15th**, made it clear that if receiver manufacturers wanted their receivers to be compatible with LinkAbit descrambler add-on boxes, the receiver manufacturers should contact Bunker at M/A-Com where they would

be 'plugged-into' the descrambler knowledge loop. Subsequently, approximately 50 such present and would-be TVRO receiver firms did, indeed, contact Bunker.

- 3) The four page 'update,' using the June 01 CSD comment from Coop, however, failed to mention the M/A-Com Nashville 'release' and it left readers with the impression that M/A-Com and **ONLY** M/A-Com was capable of supplying descrambler interface technology.

This left dealers and distributors and receiver OEMs wonder-

COMPATIBILITY

ing if the rules had changed once again; that since the mailer was 'recent,' M/A-Com had simply been stringing the receiver OEMs 'along.' HBO felt the brunt of the anxiety and heard from numerous receiver OEMs as well as distributors who were already hearing from dealer-customers that 'if this report was true,' they could not afford to handle anything but M/A-Com's T1 and H1 receivers.

HBO felt 'squeezed'; they were being accused of 'double-dealing' receiver OEMs; the same receiver OEMs which a representative from HBO and M/A-Com had visited over the period May and June to assure them that both HBO **and** M/A-Com would be very anxious to share the descrambler interfacing technology 'when the time came.' Now, HBO was being told as fall-out from the mailing, 'it appeared that HBO was sanctioning a "M/A-Com and **ONLY** M/A-Com" position.'

The first confusion was **who** had made the mailing. The return address on the envelope said '**P.D.M.A., 2089 West 2300 South, Salt Lake City, Utah 84119.**' The 11 cent per-piece postage (bulk rate) helped no-one verify the source. The envelope carried large letters which stated '**SOMETHING IS ABOUT TO HIT THE FAN.**' Indeed it was.

P.D.M.A. turned out to be a marketing organization plus mailing house. They had prepared and mailed the 'piece' for a client. That client, it turned out, was indeed M/A-Com. The mailing list had been purchased from a publication house in Idaho.

According to HBO sources, M/A-Com was **at first** uncertain about **their involvement** in the creation and funding for the mailing piece. HBO 'suspected' but did not have proof that M/A-Com was behind the mailing. Some were suggesting that the mailing was the product of an aggressive M/A-Com **distributor** who probably had a warehouse filled with T1 and/or H1 receivers. Later M/A-Com's Jim Bunker **would verify to CSD/2** that M/A-Com had paid the cost of the 'sales promotion.'

P.D.M.A.
2089 West 2300 South
Salt Lake City, Utah 84119



SOMETHING IS ABOUT TO HIT THE FAN.

SOMETHING/ indeed was 'about to hit the fan'! **P.D.M.A.** firm was engaged to create distribution of the CSD reprinted piece by M/A-Com using mailing list acquired from Idaho publisher.

As a selling promotion, it was a 'strange' one. Most selling promotions contain the identity of the organization making 'the pitch' and many also include some basic 'ordering information'; that is, direct solicitation of orders. This mailing piece contained neither of these elements; **no identity** of the group paying for the promotion, and **no order blanks** or '800 numbers' to call. Several receiver OEMs were as angered by the 'clandestine nature' of the mailing piece as they were over the piece itself.

"It is a scare tactic designed to panic the dealers" one told CSD/2. "The people behind this are not playing according to the rules; there is a lack of ethics here." HBO agreed with both comments when read back by CSD/2 and added "M/A-Com needs about two ounces of humility."

While HBO was busy trying to repair damaged bridges to the home TVRO receiver OEM world, some receiver OEMs were more interested in getting a 'confession' out of M/A-Com. "If they don't make a public statement about their complicity in this mailing, I don't think we can ever trust them to deal with us as the single source for the descramblers" one pointed out to CSD/2. "I would even make the motion at the SPACE board meeting that their representative to the Board (of SPACE) be denied his seat until they correct this image they have created and until they show us, as fellow receiver manufacturers, that we can indeed be guaranteed that our dealer customers will have an equal opportunity to buy and re-sell LinkAbit descramblers to customers." A motion to that effect was circulating amongst some members of the new (SPACE) board as CSD/2 went to press.

M/A-Com's Jim Bunker, who characterizes himself as 'the person' who has been most closely involved with the long and difficult negotia-

tions with HBO over the scrambling system, told CSD/2 "M/A-Com has spent a ton of money on the scrambling and descrambler system. We have a plant in Puerto Rico ready to build descramblers and that plant can turn out more descramblers than the world can ever use. We have to protect that investment and Phil Cox (the man who will apparently, ultimately, shoulder the responsibility for the P.D.M.A. mailing and the M/A-Com representative to the SPACE board) was doing his best to move product."

HBO sees it differently.

- 1) 'M/A-Com has a contract to supply 10,000 of their VC2C (Cable) descramblers. Those descramblers were originally going to be built in two plants; 5,000 in California and 5,000 in Puerto Rico. There was to be a minimum ramp-up period of six weeks during which M/A-Com was to supply the total of 10,000 of the cable-family descramblers.'
- 2) 'Some of those descramblers were to be delivered by December 31st and some of the cable systems were to have them installed by December 31st. However, the 10,000 cable units have not yet begun in production (November 7th) and we understand that the Puerto Rico plant will NOT be given the VC2C product to build unless there is another order from somebody such as Showtime/The Movie Channel for C series units. The California plant is not capable of handling large scale production of these units and ultimately volume production can only come from Puerto Rico.'
- 3) 'There is not, today, any scrambler system at HBO for the VC2C. The scrambler we have been testing is the older style system and we have had only a small quantity of hand-wired descramblers with which to test receivers.'

HBO SCRAMBLER UPDATE

I would be a fool to tell you exactly when HBO is planning to announce their 4 GHz DBS program. Because I don't know, and as of the date I am writing this, they don't know either. However, I can tell you that the 'signs are' they hope to announce their 4 GHz DBS program using Galaxy at the National Cable Television Association (NCTA) meeting over the period June 3-6 in Vegas.

When they actually announce, give or take a few weeks, is not the least bit important. That's a detail we can live with. Some of the other details are going to cause the fur to fly in our industry.

You would like some insight as to those details, I am sure. And that's where I have several problems. My contacts for this information are in a jeopardy position; first of all, they work within the HBO structure. They have certain confidentiality responsibilities to their employer. I like these guys (no prejudice here, there are simply no gals involved) and I don't want to see them called on the carpet for confiding in me. The second problem is larger; until the final nail is in place, the actual format of the CBD service is not in concrete. In fact, I see enough 'loose ends' as I approach their announcement date that I will not be surprised to find that they make some fine tuning adjustments after the announcement date.

So much for the excuses. Now, what is coming?

1) Programming. I expect (that means I am making educated guesses; NOBODY has disclosed anything 'inside' to me) that we will find Disney, The Nashville Network, WOR, WTBS, CNN, CBN, Cinemax, HBO and Showtime in the Galaxy One package. That's nine channels and WOR may be dropped if Turner raises a fuss (I suspect he will).

2) Equipment. I expect there will be a shortage of equipment for the descramblers initially. I think that M/A-Com's corporate people have finally realized that Linkabit (which M/A-Com owns) designs great scramblers and descramblers, and they are up to speed for volume production of units. I further expect that the descramblers we will initially see offered will ONLY be available in a Japanese built for M/A-Com 4 GHz receiver. That means that if you are a distributor for M/A-Com, or are a M/A-Com dealer, you may have an inside track for six months or so.

3) Interfacing. HBO just completed a deal with Linkabit to supply TVRO receivers to their manufacturers. They wanted to know what the problems were in sending you, the dealer, a box which would descramble the nine channels of signals and expecting you to interface that box with the various receivers now in consumer hands or on your shelves. What they found was that even the 'best' of the present receivers lacked at least one 'Linkabit' refinement. Others were not so fortunate. In the best case, the baseband audio available in a top of the line receiver required different deemphasis. In the worst case, major surgical changes would be required to get the required Linkabit compatible video out of the box. This really means that very few (if indeed any) of the present receivers can simply 'plug into' a stand-alone (outside of receiver) box that HBO will supply. That will make it tough on dealers to sell the HBO nine channel DBS service unless they are also selling M/A-Com receivers which will have the Linkabit package built in.

4) Timing. This is the dangerous ground because when you publish a date, and you miss it for whatever reason, people suspect your credibility. Don't suspect; sometimes the best plans get stuck in engineering snafus. I like the date May 1, 1985. Not to start the CBD program, perhaps, but as a date when virtually all 9 of the services we are now discussing would themselves be 'scrambled' on Galaxy 1. Some will scramble sooner, of course. The program should start quite a bit sooner than this (magic) date. But until all nine or so services are scrambled, what do they really have?

5) Together. We are bringing this to the obvious devious point; if they are going to scramble these nine channels on Galaxy 1, then should anybody who knew what was happening bother to subscribe to the service? If the same service is available on F3R without scrambling? The answer is obvious. May 1st, if realistic, is a date when HBO will be the first and at least Showtime would be scrambled on F3R. Maybe not CNN or WTBS, but they are not the only bright lights of the package anyhow. What about The Movie Channel; since leaving even one full-time premium service unscrambled might be enough to cause some people to simply pass by the scrambled CBD offering? It too would be scrambled, and there is a chance it could be part of the package as well, on Galaxy.

M/A-Com gets inside track
No other receivers compatible with Linkabit
Only M/A-Com receivers compatible

'UPDATE' was actually not an update at all; it originally appeared in CSD for June (01) as a 'warning' to industry that dangerous scenario was possible with M/A-Com controlling both the technology and the source for descrambling equipment. Reaction to this CSD piece caused M/A-Com to release open invitation to receiver OEMs to work with Jim Bunker to establish industry 'interfacing standards' (see CSD/2 for September 15th). Inspite of statement to contrary, CSD never did authorize republication of this "Coop's Comments" to M/A-Com (lower right on two-page layout).

COOP'S SATELLITE DIGEST

This may be a lot of information for you to assimilate all at one time. Let's recite the basic headlines so you can test your reading comprehension.

- 1) Nine channels in all with the surprise addition of Showtime.
- 2) A shortage of equipment and M/A-Com using Japanese built receivers that have the descrambler circuits built-in will dominate the marketplace early on (simply because they WILL be available).
- 3) Problems with interfacing older or present series receivers, but expect that to sort out by early 1985 so that virtually any new receiver can be connected to an optional onboard descrambler.
- 4) The program will be in an 'announced-but-holding' state during most of the balance of 1984. Tests will be made, but don't expect any real activity that impacts you before December or so of this year.

5) The real kickoff for the program will come when all of the fulltime premium programming firms have their scrambling systems installed and operational, on both F3R and Galaxy. If that fits their needs, great. We like the date May 1, 1985 but like any forecast, it is subject to the ability of the supplier to deliver the required equipment.

Now, when the 'formal' announcement comes, we'll see whether I get a passing grade or not. Four out of 5 would be passing in my book.

The most confusing part I have solved for lost: Who gets to sell this package?

HBO is not announcing it first at the 'cable show' by accident. Cable operators, if they are interested and if they qualify, will get the first right of refusal to sell and install CBD service packages in their areas. Hey, cable guys send big bucks to HBO every month. You'd do the same thing if you were in their shoes!

Does that freeze you, the little guy selling home TVRO terminals around the fringe of the local cable system, out in the cold? Maybe yes, maybe no. Yes if the cable guys are aggressive, farsighted and decide they can service an entire rural county or two with their service trucks just as well as they now service the town with their cable lines. Maybe no if they are realistic and decide that for a few bucks per home per month they would be better off passing up the opportunity and allowing you to do it. Or there may be a happy medium; they will 'mark' (as in sell) the service and they will contract with you (or your competitor down the street) to sell and install the hardware.

This is obviously the toughest part of the entire deal. It is going to be hard enough on you to 'lose' the present 'free premium services' as a marketing tool when you are selling TVROs. Sure, you'll 'try' to explain that there are still 100 or so channels up there and who wants to watch nasty movies anyhow? but down deep you know you will be hurt. Even I sneak a look at HBO now and again. It will be even tougher if HBO somehow gets you into a position where not only have they taken away your movies, but they are allowing some guy down the street (such as the cable operator) to sell them in competition to you. What's to stop the cable operator from selling terminals that include the premium service channels? Nothing. That will, of course, put you at a disadvantage. But before we go off half-cocked and start screaming anti-trust, let's sit back a month or two and watch just how interested the cable operators REALLY are in selling this add-on service. I'm betting that most of them will pass it up, having their hands full 'in town' and wisely staying away from the rural countryside and the service problems that entails.

SPACE's HR 5176? Doesn't that help? No, not at all. All the SPACE Bill would do is force HBO if they scramble to offer their scrambled service to private home terminals. At a fair market price. And what do you think CBD is all about? Is it HBO offering their scrambled service to private terminals? No. That would be a waste of time. Would an HR 5176 force HBO to allow you to sell their service, perhaps along with a local cable guy? No, that is not what it says and that was not even considered when it was drawn up. So HR 5176? Getting it passed will not help you one bit.

Yes, there are unknowns in all of this. That's what makes our life so interesting; we don't have all of the answers, yet, and probably when we do we'll lose interest in TVRO anyhow because the challenges will be gone.

M/A-Com units always available

(Jim Bunker told CSD/2 "We are shipping this weekend [November 10th] the first VC2C compatible scrambler system to HBO." That scrambler, however, is of little use if there are no VC2C scramblers available in the field. Bunker did not comment on the HBO report that VC2C descramblers are STILL not in production although he did tell CSD/2 "We are at most three weeks off (behind) the schedule we agreed to with HBO this past May concerning delivery of the scrambler and VC2C compatible descramblers.")

4) HBO is uncertain how, ultimately, the descramblers (if and when available) will, in fact, find 'their way' into the home TVRO marketplace. The VC2C descrambler is strictly for cable systems (that's what the 'C' stands for). Someplace between the negotiations for the cable descramblers and the planning for **home** descramblers, at least one small 'detail' was not tied down.'

DISTRIBUTION Of Descramblers

There are two versions of the **home** descrambler envisioned. First there is the VC2E, a stand-alone product originally thought to be priced in the \$400 region, which would find its way to consumer living rooms as an **add-on piece** for existing and new TVRO receivers. The VC2E remains, today, a 'dream' of HBO and M/A-Com. None have been built, none have been tested by HBO using the VC2 series scrambler system.

The VC2E was the reason HBO and M/A-Com sent a pair of field people around to visit with receiver manufacturers this past spring. The field engineers were trying to determine just how many and which existing TVRO receiver designs could be mated with the proposed VC2E so the consumers could 'upgrade' to HBO Galaxy-One service without having to buy a new TVRO receiver.

Your attention is drawn to the product-flow-box shown here. At the top we have something called 'The Galaxy Companies.' Those are the programming firms (HBO et al) who would ultimately agree to offer their services, scrambled, to home TVRO users. The 'theory' has been that HBO plus Cinemax, Showtime plus The Movie Channel, plus perhaps ESPN, CNN, Disney and others would 'bundle' their services together using a common scrambling technique and the

TVRO consumers would gain access to those services by paying a monthly fee to this consortium of 'Galaxy Companies.'

Lower down, but to the left, we have another box entitled '**M/A-Com Descrambler Source.**' That stands for the firm or firms who would build and supply the add-on home VC2E de-scrambler box. At the moment that firm is M/A-Com and **only M/A-Com.** This appeared to be a satisfactory (if not ideal) arrangement **until** the P.D.M.A. clandestine 'mailing piece' began arriving at dealer mailboxes. Now suppliers such as Channel Master are not so sure they can afford to leave descramblers in the hands of a **single supplier**; especially when that supplier is a receiver-OEM-competitor to Channel Master. Numerous others, including Winegard and Amplica to name a pair, apparently agree.

The descramblers would get into the 'stream' at the top because HBO and the other Galaxy Companies must be able to control the flow of the product to their 'program distributors' if their software (i.e. programming) marketing plan is going to work. Each descrambler will be addressable; from the uplink, the uplink operator (HBO) would be able to turn on and turn off individual descrambler units when bills are paid, or get in arrears. That's part of the reason for control; the other reason is that HBO and their Galaxy program partners feel that they must control who is an 'authorized programming distributor' to insure that the distribution network is properly policed. Coop discusses this in some detail in the forthcoming December 1st edition of CSD Magazine.

The middle box is the '**HBO Program Affiliates**' control area. At the moment, HBO's plans are that they will first attempt to set-up 'Program Affiliates' (Wide Area Distributors) through their **existing cable program distribution affiliates.** In fact, at the Western Cable Television show the end of the first week in December, in California, HBO will formally announce the 'CBD' program to their cable customers. This level is where the descramblers **plus** the scrambled programming all comes together for both 'control' and 'marketing' reasons.

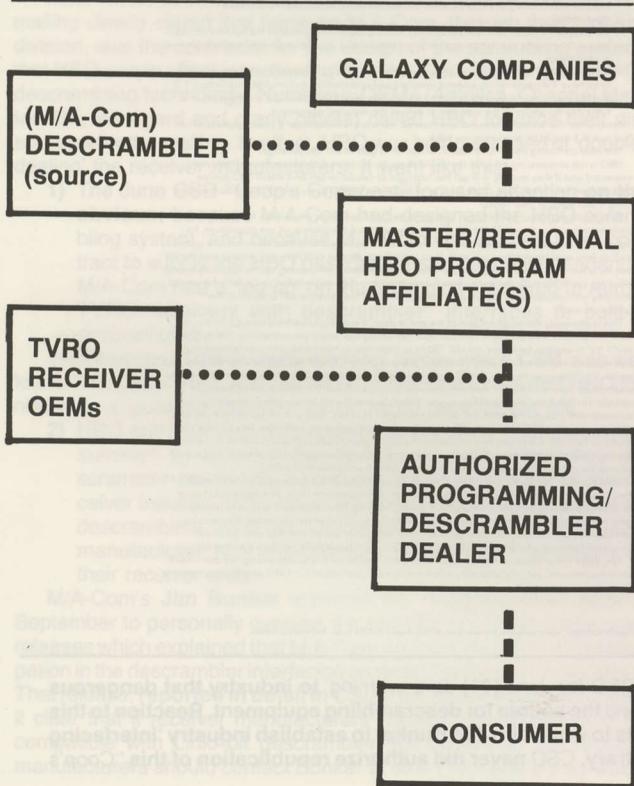
Below that level of the business plan, we have the (TVRO) dealers who are **authorized** to distribute the hardware (i.e. descramblers), and the software, to the TVRO consumers. Note that left of that 'level' we also have the TVRO (receiver) equipment manufacturers who are building the basic 'CBD/VC2E' **compatible receiver** units. The authorized descramblers **plus** the individual home-program-authorization **plus** the basic CBD-compatible receiver all come together at the dealer level.

This seems straightforward enough and it would also seem that if HBO and the programming partners were at least controlling the 'flow' of descramblers to the dealers, all TVRO receiver brands would be in about the same boat. But people such as Winegard worry that the P.D.M.A. mailing really warns the industry that as long as the de-scrambler units are in short supply (as indeed they will be if **NONE** are being manufactured!) that something else could happen. That something is called 'IRD' or **Integrated Receiver Device.**

M/A-Com certainly has had an 'advanced time table' over the other TVRO receiver manufacturers; **they** have been able to obtain interfacing details for **their** receivers for more than a year now. Other receiver manufacturers received their M/A-Com 'interim level' details from Jim Bunker's office only during the first week in November. So while Amplica and others have been 'patiently' waiting for those details since at least early September, M/A-Com meanwhile has been able to **design receiver models** which will have the descrambler **built-into the receiver** proper. That's the IRD unit.

HBO told CSD "We are hearing a fear from receiver suppliers that as long as there is a single source for descramblers (M/A-Com) and M/A-Com is building their own receivers, they are likely to take all of the basic descrambler boards their own production needs for their own IRD use **and if and when** there are surpluses in the production of the basic descrambler board **then** (and then only) will M/A-Com make VC2E units available for outboard or self-contained (i.e. own housing) distribution." And that, indirectly, is precisely the 'fear' planted in dealer and distributor minds by the P.D.M.A. piece clandestinely mailed from Salt Lake City.

Several manufacturers, who have received the VC2E 'interim interface requirements' mailed by Bunker's office early in November,



**PRELIMINARY
2000-E - TVRO RECEIVER
INTERFACE REQUIREMENTS**

10 October 1984



M/A-COM LINKABIT, INC.
3033 Science Park Road
San Diego, CA 92121

M/A-COM's Bunker sent out detailed 'interim interfacing data' to approximately 50 receiver suppliers November 1st; specifications which he told CSD "are about 92% accurate to those published in CSD for August 1st." Several receiver suppliers suggested that this mailing was done only because M/A-Com was getting brunt of negative criticism from TVRO industry receiver suppliers after P.D.M.A. created mailing was circulated.

want to know WHEN they will get details on the 'IRD' portion of the package. The VC2E data pertains ONLY TO the ability of a TVRO receiver to accept a cable interface that will connect to a **stand-alone** (\$400 price-range) descrambler. The IRD approach, building the descrambler directly into the receiver proper, is by all studies far less expensive; perhaps in the \$100 region.

Doug Dehnert of United Satellite Systems/ (Maspro) points out "Let's say M/A-Com plays it absolutely straight; they get us all of the VC2E units we need. Now, here they are offering their own receivers with the IRD version of the VC2E built-in. I have to get my full receiver price plus stick my customer with \$400 or so for a VC2E to receive the Galaxy One services. Meanwhile, M/A-Com is tacking \$100 on the price of their receiver and offering the same package in one box for \$300 less than me. I don't think this is going to be a very level playing field!"

Channel Master's **Syl Herlihy** agrees. He worries about **who** will run the descrambler distribution plan, and **who** will control both the flow of product and the flow of design information so that any receiver supplier who wishes to offer CBD compatible equipment can be in the marketplace with essentially the same handicaps.

M/A-Com had heard these fears previously; starting at or shortly after the original CSD piece for June 1st was printed and circulated. Bunker recalls meeting with Channel Master's **Dick Deutsch** in Nashville: "He wanted me to assure him that Channel Master could buy the retrofit units. I told him that based upon the marketing plan devised by HBO, he would never have to purchase (stock, warehouse) the units at all; they would flow from the OEM (which would be M/A-Com) to the dealer and customer through the HBO program

affiliate program. He liked the idea that Channel Master would not have to inventory the units."

But, again, that was before the P.D.M.A. mailing which brought back the **fear** that if you don't manufacture or at least control the distribution of the descrambler units, you might not be able to get the descrambler units your dealer/distributor organization requires to satisfy customer demands.

David McClaskey of Intersat: "It really comes back to M/A-Com being the sole source for both the technology and the hardware. They can draw all of the pretty little boxes they want to show how the product is 'supposed' to flow. But if in the real world M/A-Com sits on both the designs and the finished product, the rest of us will be left out in the cold when it comes to satisfying the dealer networks we have established. I think it is a beautiful example of an anti-trust conspiracy."

HBO plainly wants to distance themselves as far from the 'threat' of such a conspiracy as possible. Bleeding from the wounds inflicted between November 1st and 6th by the receiver OEMs and distributors who felt the P.D.M.A. mailing was but the first play in a long, one-sided 'game' with M/A-Com's TVRO receiver division, HBO 'requested' that M/A-Com's Bunker come to New York on November 6th to discuss the matter. After the meeting, in discussing the talks with HBO, Bunker characterized the 'trip' as a 'routine visit' to keep himself updated on the HBO marketing plan.

"Our Puerto Rico plant can produce more descramblers than the world will use in five years" he reiterated suggesting that people should stop worrying about 'shortages.' He acknowledged that some firms had approached M/A-Com to request being licensed to build the VC2E (or IRD) portions on their own. But he gave no indication that M/A-Com was going to back down from its position that it **and it alone** would be the **source** for the home descrambler hardware. There was no discussion about the pricing differences between the VC2E external 'add-on' descrambler and the IRD inside-of-receiver package which **HBO insists** is the direction M/A-Com is headed internally.

In the midst of all of this rhubarb came word that HBO had finally nailed down an announce-date for 'CBD'; it would be at the California Western Cable Television Show (December 5-7) in Anaheim. As frequently reported in CSD over the past year, the cable affiliates for HBO would be the first to have the opportunity 'to market' CBD to TVRO customers; a separate and distinctly different 'hurdle' for the TVRO dealer to deal with on the local level (Coop discusses this in depth in CSD for December 1st).

**OFF THE GROUND
WITH THE
YOUNG ASTRONAUT
PROGRAM**

PRESIDENTIAL Decree

"A few days ago, I saw a cartoon showing two school children and one asked the other 'I wonder why the President wants a teacher to be the first passenger on the (Space) Shuttle?' And the second child replied 'Probably to make sure nobody has too much fun in outer space!'"

And so, with a quip and a story, United States President **Ronald Wilson Reagan** began his introduction of the Young Astronaut Program on the White House lawn, October 17th. The event had special



"WHEN THE SHUTTLE lifts off, each of us will be reminded of the crucial role teachers play in the life of our nation . . ."

significance for the home TVRO industry because it came only days after the United States Congress had approved legislation which firmly legalized the manufacture, distribution, sale and use of home TVROs within the United States and its territories. It had additional significance because the **Young Astronaut Program** was designed to utilize as many as 110,000 home style terminals located at public and private schools nationwide.

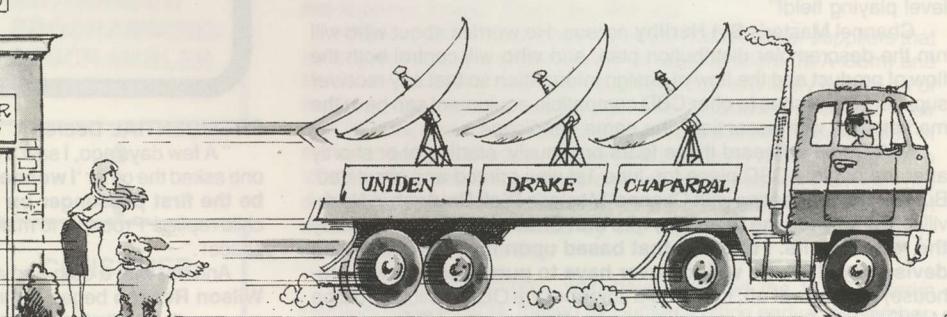
Simply put, for dealers, the 'Young Astronaut Program' offers an exciting, new opportunity to sell TVRO systems in their local markets. With Presidential 'sanction,' and with the apparent aggressive support from a number of major (U.S.) corporations, 'Y.A.P.' would be a very visible part of American education over the next ten years.

CSD/2 attended the October 17th event (see CSD for November 01) and talked at length with **Jim Coyne**, head of the **White House Office of Private Sector Initiatives**. Coyne is the White House 'liaison' for the program; the man responsible for turning President Reagan's wishes and public announcement into a working policy. Coyne will not administer the program himself; his office is active in a number of areas of Presidential interest and once 'Y.A.P.' is suitably launched, it will quickly operate through its own Executive Committee which is chaired by Columnist **Jack Anderson** and vice-chaired by television news personality **Hugh Downs**. The operating executive for 'Y.A.P.' is **Wendall Butler** (Executive Director, Young Astronaut Council). Those wishing to discuss participating in the program, after reading what follows should contact Butler at **1015 15th Street N.W., Suite 905, Washington, D.C. 20005** (202/682-1984).

All TVRO dealers should request the 'Young Astronaut Program Chapter Information Kit'; a collection of materials explaining how individual schools become affiliated with the national program. Schools should become enrolled promptly since a constant stream of printed data will be coming from Wendall Butler over the next few months advising the schools of the program and its objectives. There

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FASTER, FRIENDLIER AND BETTER



is a very nominal annual 'chapter affiliation fee' of \$20 per year. An aggressive dealer would take the lead and enroll his local schools in the project (paying the \$20 fee) after meeting with school officials to explain the program.

To explain the program, first you must understand it yourself. The 'Chapter Information Kit' is a start. CSD/2 and CSD will be providing additional information as well on a regular basis during the start-up phase of the program. To get that process rolling, CSD/2 invited Jim Coyne to join in a round table discussion with former **Astronaut Gene Cernan** and TVRO industry equipment supplier **David McClaskey** (Intersat Corporation), in Coyne's office. We believe you will find their 'dialogue' instructive to the inner workings of 'Y.A.P.'

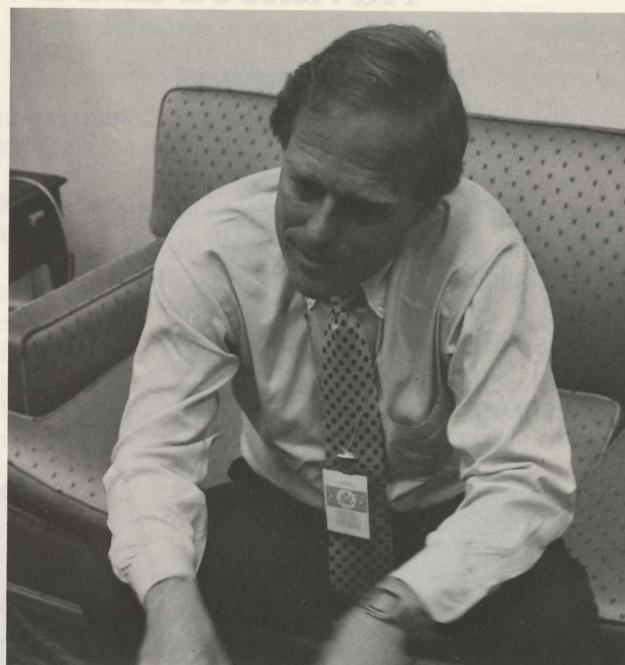
Equally instructive are some of the words of President Reagan during his introduction of the program.

"When the Shuttle lifts off (with a teacher on board) each of us will be reminded of the crucial role teachers play in the life of our nation, and to the importance of space to our future. I cannot think of a better lesson for our children or our country."

"(With Y.A.P.) . . . NASA, our Office of Private Sector Initiatives, the Department of Education and the National Space Institute with help from the National Science Teachers Association and other educational and aerospace groups have designed an outstanding curriculum. (Students) will find incentives to pursue science and math and the chance to take part in exciting space related activities. **The end product will be knowledge**; our greatest resource for meeting tomorrow's challenges with optimism and success. And that's the driving force behind the Young Astronaut Program."

Coyne: **"I look at the home TVRO industry as an example of unfettered private sector aggressiveness."**

CSD: Give us a time table for the next 90 days; what do you see happening in that period of time to follow up on the launch of the Young



"I LOOK AT THE TVRO industry as an example of unfettered private sector aggressiveness . . ."

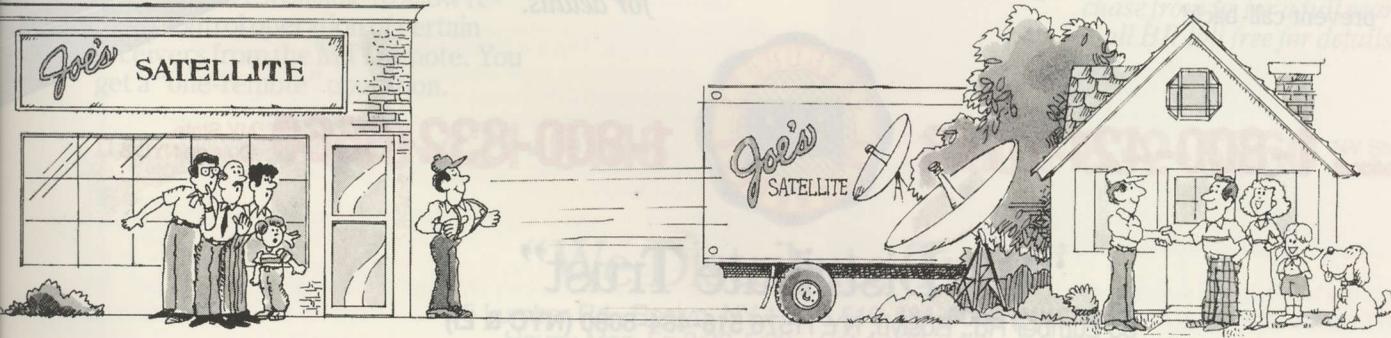
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mesh antennas costing a great deal more to ship. Nope, with the BR mesh antenna, there's no more bulky, costly shipping.

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The BR LNA cover keeps the temperature of the LNA stable, thus insuring more consistent performance. And since it cuts down on condensation, you're less likely to have moisture problems. It's a good way to prevent call-back!



which contributes to its increased stability. And it's got a cast aluminum mount, not fabricated iron, like some. It's even got bronze bushings at the pivot points, and stainless steel hardware.

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The 4100. The Antenna Positioning System That Does It All Perfectly.

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Wireless, infrared remote control.

Fully programmable polarity controlled by built-in Polarotor I™ Interface.

Fully programmable memory skew on every satellite, every position.

Mechanical locking limits built into actuator.

Interface available to allow remote control operation of certain receivers from the MTI remote. You get a "one-remote" operation.

125 feet of pre-assembled cable included in price.

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125 feet of pre-assembled cable included in the price.



2100 or 4100. It offers unequaled style, design and ease of operation in a manual East/West digital antenna positioner. It features:

Large, easy-to-read LED digital



display.

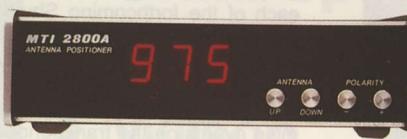
Optional, hand-held infrared remote control with polarization control.

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System includes the controller/power supply unit, the Saginaw® actuator, with Choice of Acme (silver) or Ball Jack (gold).

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Astronaut Program?

Coyne: "I hope we have 10,000 requests for information, from schools, and other youth groups during the next couple of weeks. We want to hear from people who want to create Young Astronaut 'Chapters.' We have intentionally created a de-centralized project. It is something which really needs to grow and spring out of the involvement of communities all over the country. We purposefully did not want to see a **federal program** with **federal controls** and dictums. I hope that within the next few weeks each of those people who write-in will receive from us a set of materials which will assist them in creating one or more local 'Chapters.' This is a 'start-up kit' that tells them how to get two or three local businesses to help with establishing a local chapter. And out of that will come a leader in the local project."

CSD: Is there a name for the leader?

Coyne: **The program is not that structured** but it is likely that this person will function as a counselor for the chapter. As far as naming that person, we are leaving that to the individual chapters for now. We want to see as much individual initiative as possible."

CSD: The chapter leader in a community, must they somehow be associated with the school or school system?

Coyne: "**No, not at all.** Certainly many of the chapter leaders will be school science or math instructors but it really comes down to someone in the community taking the initiative to get a chapter operating and then act as leader or counselor for the group. Ideally, it could be a businessman who perhaps has an interest in the technology."

CSD: Such as a local dealer in TVRO systems?

Coyne: "**Yes, certainly!** Or it might be a group effort; perhaps the local Chamber of Commerce would support or back a chapter; it might be a local service club such as Kiwanis. In each case, the individual or group takes a responsible role in their community, exposing young



"**THERE IS** a tremendous amount of American technology represented in each Shuttle flight . . ."

minds to what space really is; **a physical as well as an intellectual frontier** for all of mankind."

CSD: Explain how the program is financed in its start-up stages.

Coyne: '**Each chapter registers with us in Washington**, and that fee is \$20 per year. However, the materials the chapter will receive during that first year could easily cost \$150 or more. The difference is made up by the **national sponsors**; firms such as Commodore, Pepsi-Cola or Intersat. They have agreed to commit \$250,000 each over a ten year period (\$25,000 per year) to pay for a share of the administrative expenses."

CSD: Communication, between chapters and between the chapters and the national headquarters, can be complex. How will you keep everybody informed of activities?

Coyne: "**Not all of the details are ready to be released, yet.** Basically, there is to be a nationwide 'computer network' which each chapter will be connected to. Then there will be a satellite data network, partially computer operated and partially not computer related, through which all schools will receive the latest information. This network will also serve as the vehicle to distribute the educational and learning programs. Additionally, every member of every chapter will receive a (free) **computer ID** with which they can 'sign on' the (YAP) computer network."

CSD: Can we address how the satellite feed, on F4, will be used in this distribution network?

Coyne: "**We are looking to people such as David McClaskey** and others like him to help us design a totally satellite delivered system. I'd like to talk with broadcasters, programmers and the existing satellite operators so that they can either through the (new) NASA transponder or through commercial transponders cooperate to provide information to the youth of America. We have talked with **Disney**, for example, and we are thinking about 'special programming' from Disney. We are talking with **Group W, Broadcasting**, as another example; a major broadcast owner and an owner of a significant amount of transponder space. (In the beginning) I would expect that every satellite launch will be covered, totally, on the NASA channel."

CSD: What about the role of NASA; will there ultimately be 18 to 20 hours per day made up of NASA supplied programming, perhaps programming from firms such as Disney and Group W, on the transponder?

Coyne: "**That's all being studied.** 'The Space Station,' our interim name for the individual school TVROs, will be tied via satellite to the multiple 'command centers.' The role of the satellite transponder service is still being defined but basically **we want to use it to do what it can best do**; disseminate information to the largest number of chapters and members in the shortest period of time. I would expect each of the forthcoming Shuttle launches to become a miniature 'learning lesson' since each of the monthly launches will have special experiments and projects associated with that launch. I can see the experiments scheduled for that particular Shuttle launch being the focal point for special chapter projects, demonstrations, and programming events on the transponder channel."

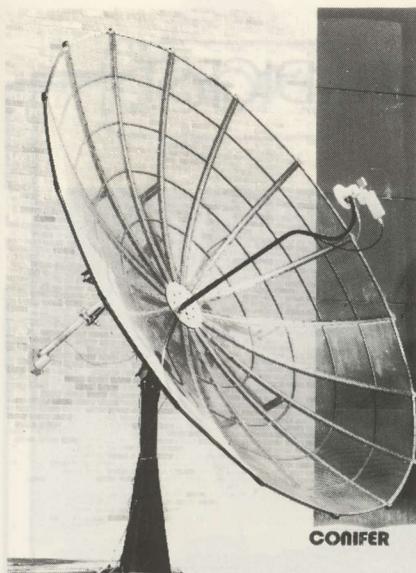
"At one point in such a Shuttle flight, in addition to the routine full Shuttle coverage on the NASA channel, I would like to see an Astronaut do a 30 minute transmission, from the Shuttle back to earth, talking to the students about that particular flight or event or experiment."

Cernan: "I have suggested to NASA that the Shuttle makes the perfect 'platform' to routinely conduct worldwide press conferences during each flight. There is a tremendous amount of American technology represented in each Shuttle flight and America needs to be taking 'advantage' of that event in the worldwide press."

Coyne: "**I can envision an Astronaut** steering the television camera out a bay window with the prologue 'Now this is going to be a geography lesson from space; today we are going to study from space Central and South America'."

Cernan: "You could write full student courses around the demonstrations and lessons from space. Space gives the educators entirely new tools to work with."

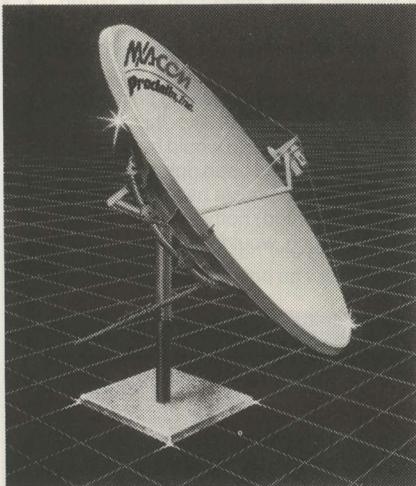
Coyne: "**We are getting an awful lot of support from NASA,** The National Geographic and others in this project. My mind gets very



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excited about the potential of all of this."

Cernan: "The tools are already in place. They are flying more people on the current Shuttle flights than they need; people are being 'taken along for the ride' just to give them the experience of having been in space. **They don't need seven people on a flight.** There is no reason not to dedicate people to the educational purposes we are talking about. This could be a program of real substance, not one of the 'Gee Whiz' programs that so often happens."

Coyne: "During the next month or two we will be sitting down with our Advisory Council, **Jim Beggs** (Director of NASA) and outside experts such as Gene (Cernan) to develop a list of perhaps 20 to 30 really worthwhile projects which can be done with the transponder. There is no reason why we cannot look at the Space Shuttle as **the first real educational opportunity in space.** Gene's concept of the Astronauts taking a more active role in that educational process is dead on target."

Cernan: "I have been battling to get this concept across for nearly 20 years . . ."

Coyne: "I think the first 'teacher-in-space' is going to step off the Shuttle and utter the words 'WOW! Space is the blackboard of tomorrow!'

"Our first task is going to be the launching of a 'marketing campaign' to acquaint the schools, the teachers and the youth of America with the Young Astronaut Program. It would be foolish for us to sit here in The White House and assume all of this is just going to 'happen.' **We have to go out and make it happen.** One of our concepts is to take all of the nation's science museums and send to them a display to show how the program will work. Then we will invite the science and math teachers in that area in for a perhaps one day seminar or 'show and tell' to give them the opportunity to see the program working and to ask questions. I'd like someone like you, Gene, as an experienced Astronaut and someone like David (McClaskey) to be a part of these presentations or seminars. **We have to sell the idea** that with every new Shuttle launch there will be a new potential 'team' of educators in space. If we can sell the idea that the Young Astronaut Program will be a **constantly self-renewing educational forum**, I believe it will be a very short time before we have tens of thousands of dedicated in-school TVRO systems in place."

McClaskey: "We have a two pointed problem here. First we have to have programming, and then we have to have a way to receive that programming. And everything has to be in place at the same time and that is the central problem. And we have to finance these dishes for the schools and the young Astronauts and it is my understanding that in many cases the dish systems will be funded by local businesses or by local groups and they will be donated to the schools. To test this concept, we located three schools in our Lake St. Louis district and found firms to underwrite the \$3,000 systems in our own backyard. It was an 'easy sell' and with the national support of firms such as **Burger King and Pepsi-Cola**, to mention just two, it will be quite easy

Note: Dealers may wish to copy this report for use as 'hand-outs' to local school administrators.

ODING #2
DEHNERT/ODOM



"WE ARE LOOKING for people like David McClaskey to help us design a totally satellite delivered system . . ."

to do virtually anywhere. I like the concept that the children will be a part of a national group and with identification tools, such as the badges and cards, I think it will work."

Coyne: "We are starting off with a single (NASA) channel, but I understand that it will be possible to provide two or more channels, simultaneously, to schools. Perhaps what will eventually happen is that a multitude of in-school instructional channels will be available, on the same satellite. This is just the first step in the proper utilization of space, or satellites, for a wide range of educational disciplines."

McClaskey: "Twenty years ago we only had three channels of television available to us. Now we have 100. In another twenty years that number could be 10,000. The ability to 'target' specific channels of information to specific interest groups is what the satellite evolution is really all about."

In closing this first look at the Young Astronaut Program, a few excerpts from Jack Anderson; the man who conceived the Young Astronaut Program.

"The young people here (at The White House) represent the millions of young people who will become a part of this program. You represent the first of the youngsters who will be taking part in this exciting concept. You will be told that a program like this cannot succeed. If the pessimists had been right, this world would have never seen peace and prosperity. If the pessimists had been right, I think the world would probably have starved. If the pessimists had been right, I think nothing much would have been invented, nothing much would have ever been discovered, nothing much would have ever been improved."

In the October 15th issue of **CSD/2**, we began a 'dialogue' series between United Satellite System's **Doug Dehnert** and Odom's **Randall Odom**. Both men began the design and production of TVRO fiberglass antennas 'early on'; in the late 1979 period. Both men have built successful businesses by staying with the fiberglass design and learning the limits of their chosen 'medium'. Odom Antennas is the largest producer of hand-laid-up fiberglass antennas in the world today, having opened an 'automated' production line facility for the production of dishes in the 8-13 foot region in mid-1984. That plant is the latest expansion of the firm. USS produces far fewer antennas than Odom (Odom clips along at 3,000 plus per month **capacity**) but the USS antennas have a reputation for extreme accuracy and rigidity.

Both Odom and Dehnert are 'self-made' men, rugged individuals who speak their own mind and who have strong convictions about the integrity of their products. We resume the dialogue.

CSD: Randall, talk to us about 'volume production.' You are the largest producer of your style of fiberglass antennas in the world today. You have done some unique things to get into that position.



ODOM: "Once fiberglass people acquire bad habits, you cannot retrain them . . ."

Talk about that.

ODOM: "Our new plant solved one of the two problems we had always faced; having enough space to work a true production line. Up until now, fiberglass antennas have always been almost custom built. You had to wheel every section around by itself on a trolley or dolly and it just wasn't very efficient. But perhaps you only get to the point where you need more space by being able to 'work people'. That's the most important thing because if you can't work people you can't utilize the facilities to their fullest extent. I have been very lucky all the way down the line to get the right people in the right spots."

CSD: Now Arkansas is quite famous as a home of fiberglass products. The state is big in building (fiberglass) Bass Boats, for example. Are you saying that you have been able to 'tap' the trained fiberglass labor pool and that has been a key to your growth?

ODOM: "No, the biggest portion of our people I train. But I was very fortunate in getting a chopper-gun operator who is perhaps the best in Arkansas. And she's a woman about 38 years old and I found her three years ago. She's as tough as a pine-knot and she doesn't put up with any (expletive deleted) from anybody. She knows what she is doing and if you tell her you want something a quarter inch thick, you'll have it a quarter inch thick. She trains all of my gunners and the first thing you have to do is to have a gunner that can put enough glass out there to keep a bunch of people busy. Then you utilize everything to the fullest extent from that point forward. You know exactly how long to leave it on the mold so you won't get distortion, for example. Doug will back me up on this; when you start pulling off molds too early, when they are still green, you end up with a bunch of junk. Then the next key

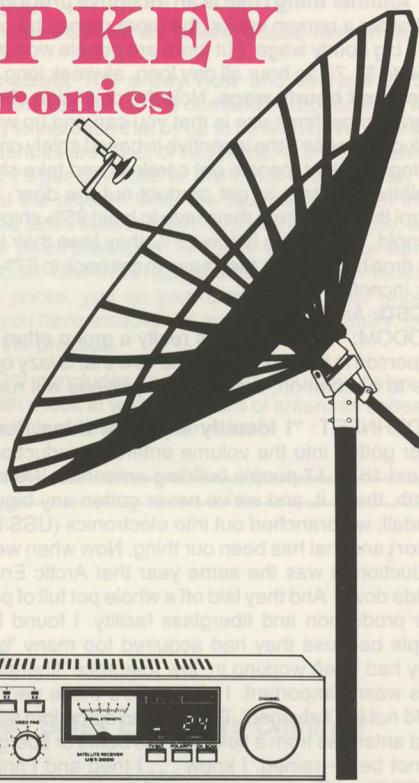


DEHNERT: "I was going to build just one tool and make half of a 12 foot antenna . . ."

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is to have somebody in the plant, fulltime, who can 'get on' the people so everything flows properly. In this spot you don't necessarily need to have somebody who knows a lot about fiberglass; they need to be good plant management people. For instance, I have a fellow who spent 11 years with Texas Instruments in plant management. He went from TI to Timex and after three years Timex closed down because they moved those production facilities overseas. He came to work for me and I felt I was very fortunate to get somebody like that who had the ability to handle people.

"Another thing I use is an incentive program. I like the idea that the harder a person works, the more money he or she makes. I don't pay a big hourly wage; but there are people working for me who make \$1.50 to \$1.75 an hour all day long, all week long as incentive pay **on top of their hourly wage.** Now the downside of the type of incentive program most firms use is that you can end up with a bunch of scrap product because if the incentive is based solely on the total production leaving the plant, people get careless and take shortcuts to bust their (expletive deleted) to get product out the door. So I have a way to control that; I tell them they have to build 95% shippable product out of the mold. If they drop below 95%, they **lose** their incentive pay. And if they drop below 95%, they have to get back to 97% before they re-gain their incentive pay!"

CSD: And it works?

ODOM: "**Beautiful!** It is really a group effort this way. If you get one person in the production line flow that is lazy or careless, you don't have to run him off; the other employees will run him off!"

DEHNERT: "**I identify with one thing** Randall said; we have never gotten into the volume antenna production and we only have around 16 or 17 people building antennas. We build around 150 per month, that's it, and we've never gotten any bigger than that. Unlike Randall, we branched out into electronics (USS/Maspro receivers — **editor**) and that has been our thing. Now when we actually started our production, it was the same year that Arctic Enterprises was going upside down. And they laid off a whole pot full of people who worked in their production and fiberglass facility. I found I couldn't use those people because they had acquired too many 'bad habits' at Arctic. They had been working in 'low tolerance' fiberglass where the thickness wasn't important. I tried to hire these people, and they simply could not be 'salvaged'. People who come into this business, trying to build antennas from a field such as boats or fiberglass fenders, simply cannot be re-trained. I know . . . I tried and I finally gave up!"

ODOM: "**That's the truest thing** you will ever hear about fiberglass people. Once they acquire bad habits, they cannot be re-trained . . .".

DEHNERT: "**Boat people are the worst** of all. Bolt holes? They don't care if they are a quarter or half inch out. They make boats go 'fast enough' by simply putting a bigger engine on the suckers."

ODOM: "**I keep learning that lesson** over and over again. A local boat manufacturer went bankrupt and we hired a guy from that firm to oversee one of our production groups. He had a list of credentials that wouldn't quit. And right from the start, the day we opened the new plant, he started turning out 30% bad product. And he wouldn't listen to a damn thing I had to say. He had all of the people in this group at the new plant that had contributed to the bankruptcy of another company. And they had brought all of their bad habits with them! You simply cannot change people's bad habits because these people actually believe they are right. I kept hearing 'But that's not how we did it at (name of boat company)'. I told them 'I don't want to hear that (expletive deleted); that company went bankrupt and there is a reason why they did!'"

DEHNERT: "**That's exactly what I heard** from the people at Arctic: 'That's not how we did it at Arctic!' I told them to go back and do it that way there but they were either going to do it my way for USS or they wouldn't have a job with USS. Of course 'there' didn't exist anymore.

ODOM: "**I told a guy one day** that he had done six parts in a row with the wrong catalyst mix. 'I don't give a damn how you did it **down there**,' if you do anymore of that around **here**, you will be gone.' It wasn't but a day or two and he was gone! So eventually I found out that the best people you can get are the people you train yourself."

DEHNERT: "**I don't think you can build** the kind of high quality,



ODOM: "We run about 100 antennas per day and average 2,200 per month . . ."

high tolerance fiberglass antenna our industry demands for long life-cycle performance by using any of the pre-existing fiberglass technology. At one point, I didn't want to build a 'production facility.' I was just going to make tools and contract it out to a major boat manufacturer. I screwed around with those people for six weeks and finally decided there was no way they were ever going to manufacture TVRO antenna pieces; even using **my tooling** they were messing up the pieces. And with me standing right there supervising. It was incredible. And that's when we went back and got our own building and started our own production line. I do sympathize with Randall on the increased production problems. Fiberglass is unique in another way; you reach a certain level of production in a given amount of floor space and there is no way in the world to increase the production beyond that point without increasing the size of the facility. You can run a spray booth to just a certain capacity; you can circulate just so many tools through there. Right now we have been turning down orders for months because we are running at capacity. I could double my shipping totals by simply accepting the orders we turn down, provided I was ready to go out and equip another pair of buildings with the identical facility we now have."

ODOM: "Did you ever think about how much money you and I could have made if we had **never built** a damn antenna!"

DEHNERT: "I have to come back to what I started out to do in the beginning. I was going to build just one tool and make half of a 12 foot antenna. I have a house with ten acres and I was going to build a small shop across the road from the house. With one chopper gun on one end and a small welding shop on the other end, I had it all figured out. I'd go out there on Mondays and spray up half an antenna. On Tuesday morning you'd pull that and spray up another half. On Wednesday you go out and build yourself a mount. On Thursday you load all of this (expletive deleted) in a truck and by Friday night you have the installation completed. You'd make a couple of grand and on the weekend you'd go fishing or whatever and then next week you'd go back and do it all over again! I wouldn't have had near the (expletive deleted) headaches I now have. I wouldn't have a big bunch of people working for me, I'd be my own boss and when I wanted to work, I'd work. When I didn't want to work, I wouldn't . . .".

ODOM: "Suppose you and I had just built tooling, never built antennas. Think how much better off we'd be!"

DEHNERT: "The industry would be better off, I'm sure of that. But let me tell you something; the dumb son-of-a-bitches wouldn't have bought the tooling from us! They all start off thinking they have a better way. Look out here on the (Nashville) antenna lot right now at those mesh antennas. Everyone of those guys thinks he has a better way."

CSD: Let's talk about costs. But you guys have to keep in mind that this is for print and your honesty may come back to haunt you.



DEHNERT: "This may get Randall a little ticked off, but you can't put a 10 foot antenna on a 3 inch pipe . . ."

DEHNERT: "We figure processed fiberglass costs us about \$1.25 a pound."

ODOM: "Amazing, my number runs right at \$1.24 a pound. That's labor and all. And I add around 10 to 15 cents a pound for loss because you spray a certain amount of it on the ground. But let me give you an

example of what you can do with your costs if you will carefully watch all of the cost factors. Originally, I was paying about 18% of the cost (per pound) for labor. But with the incentive program we have for employees, it brought my labor cost per pound down to just over 9% of the total per pound cost. I run two shifts and I run 40 hours per week but I do it on a four day work week. I tried to do it with three shifts and five day weeks and I found out I was far more efficient with the two-shift approach and longer days, 4 days per week. The starting and stopping, the preparing to clean up and the clean up, really eats into valuable production time."

CSD: How many antennas are we talking about, here in early September, per month?

ODOM: "We run about 100 a day now and average 2,200 antennas per month. That's subject to the demand of course since we have the plant capacity to increase that by up to 50% in a given month. The majority of the antennas are solid, or two piece. In a 100 antenna day, we will run about 75 per-day solid or two-piece and 25 a day in four piece. But it is, at the present time, the four-piece market that fluctuates the most. The sales results from this show, for example, will cause us to up the four piece production to 75 per day for quite some time to catch back up gain. See what happened the past few months; as manufacturers cut prices, you do your best to hold your prices because of the name you have established and your own quality. But you lose business in the process."

Next month, CSD/2 concludes our fiberglass dueling between Dehnert and Odom with a look at what the future of antennas appears to be to these two fiberglass antenna pioneers.

**DISH
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THE OPPORTUNITY TO SPEAK OUT ON ISSUES FACING OUR INDUSTRY TODAY.

CSD/2 operates this 'industry forum' in the following manner. Each month approximately 60 members of the industry (representing all levels of industry participant) are sent one or two questions for response. We invite this 'board of advisors' to voice their opinions on subjects which we have selected as relevant to our rapidly changing industry. From the responses, we select those which seem to best focus on the question(s) for that month and summarize those comments here.

You are invited to participate in this sequence by requesting that you be added to the 'CSD/2 Dish It Out' list. Direct your request to Carol Graba, CSD/2, P.O. Box 100858, Ft. Lauderdale, Fl. 33310.

This month we asked our advisory board to comment on the latest trend in distributor selling; the placing, on the road, of sales-engineers. Many distributors feel the 'honeymoon is over' and the era that allowed distributors to sit camped on 800-telephone-lines writing down orders is over. The new breed of competitive distributor is fielding a selling force that calls on dealers, providing hard-knowledge through training seminars, and otherwise trimming his margins and showing dealers that he does, indeed, want and appreciate their business. Is this a trend that is likely to grow during 1985? **That's our topic this month.**

STEVEN L. RIESER
S.T.S. SOUTH, INC.

ON THE TABLE:

'Are On-The-Road Sales Engineers Coming?'

"S.T.S. South Inc. has been in operation in Florida since November of 1980, when I believe we and Hero were the only two true distributors in the state."

"We have in the past experimented with on-road representatives via myself traveling to many of our dealerships across the state for seminars, expos and general public relations with intention towards increasing sales and decreasing problems. Our experiences have been that in virtually every case an effective salesman can and will with a regular schedule increase sales in his territory. However, over the period of six months, factors kept surfacing of which in the end caused us to discontinue our efforts in this area. I will elaborate on this and other areas that are both positive and negative."

"The overwhelming problem faced by the on-road representative was and still is **product failure** and education. In my experiences on-the-road, each dealership did appreciate the fact that an on-road representative would visit their location on a thirty (30) day basis. However, their reason for this was entirely related to the **service aspect** of our business and not the selling part. Our experiences led to first more trouble shooting for the dealer and secondly product training, which in the long-run did increase dealer loyalty."

"We also found that the distributor who uses the on-road representative technique had better have his home office operations

well in hand, otherwise the on-the-road representative has a real nightmare on his hands with dealer complaints.

"Finally, the smart distributor must have a good hand on traveling expenses. As you and I know, **the dealer foots the bill in the end.** While on-the-road, the average cost was \$175 a day to properly support an on-road representative. Try increasing your total system cost by \$175 each and watch the dealer reactions!

"Although the above generally sounds negative in nature, it should be viewed as necessary information when considering this marketing concept.

"In the long run, the distributor who markets his products and

services in this manner will average 2-4% higher on the total system package to cover his representative's expenses. This small, percentage increase, as compared to the service offered to customers, in my opinion is an excellent trade-off for the new or less experienced TVRO dealership. But keep in mind that home office support is still the key to any marketing approach."

CSD/2 readers with differing views on this month's 'Dish It Out' topic are invited, as always, to respond 'in kind.' Direct your comments for publication consideration to '**CSD/2 Feedback**', P.O. Box 100858, Ft. Lauderdale, Fl. 33310.



FEED
BACK

Linde On 'Elegant BDC Shared Systems'

Reader **Roger Linde** is President of **TX Engineering**, an innovator in multiple-receiver 'shared-antenna-system' equipment packaging for the home TVRO industry. Linde's firm and products were featured in the October 15th (1983) edition of CSD/2 as well as in the December (01) edition of CSD. At that time we were intrigued with their equipment package which allowed the through-the-air transmission of 12 channels of television as first received from a TVRO dish (i.e. re-transmission of all signals on one polarization). We dealt with this at some length in the December 01 issue.

Linde responds to several recent articles and letters appearing in CSD and CSD/2 in what follows. His concern is that TVRO dealers understand that at least one firm (his) has taken block down-conversion systems 'a step further' and does provide all of the 'bits and pieces' which are required to assemble a home or multi-home system using a shared antenna.

"I read with interest your September 1 article on Ramsey Electronics and the September 15 'Dish It Out' feature. Portions of the Ramsey interview concerned block down conversion systems which, of course, fits into the 'On the Table' feature 'Is there a market for shared TVRO antenna systems?'

"As you are aware, TX Engineering has installed numerous large (up to 160 units) shared antenna systems (we call them 'Community Television networks' or CTN's). Most of these are in the Pacific Northwest; however, we do have systems currently under construction (46, 116 or 144 units) in Kentucky and South Carolina.

"The working systems are providing excellent satellite reception to areas that otherwise would not have any form of expanded television entertainment. TX Engineering CTN's, when properly engineered and installed, have proven to be exceptionally reliable and trouble-free. (To date, our one and only service call was to replace a defective fuse).

"TX Engineering considers itself the leader in shared antenna system technology and from that position, I would like to offer some comments on your recent articles. John Ramsey certainly has a good feel for the problems that have arisen from companies selling the 'sizzle' of shared systems without the supporting technology of hardware to make them work.

"Ramsey states 'Janeil is an excellent example of selling sizzle; their well conceived, well done, two-page spread pushing their Anderson-like receiver shows how expandable the BDC system approach is. But, when dealers try to buy the necessary bits and pieces . . . the dealer learns Janeil doesn't build any of the required parts. They don't even offer an instruction manual . . .' **Right on, John!** We have received countless phone calls from dealers asking for help in making their Janeil or Anderson systems work. Their frustrations are real and intense, and I'm sure they are talking very negatively about shared systems.

"The fact is, any shared system of any size (say more than a dozen units) will **not work** properly with existing CATV hardware and technology. We are dealing here with high attenuation frequencies and bandwidths wide enough to cause considerable tilt, and CATV hardware was not designed to properly accommodate these factors. TX has chosen to use telecommunication technology developed for the military to design a complete line of supporting hardware ensuring that our CTN's provide quality reception on a trouble-free basis.

"Our solutions include distribution products and services as follows:

- 1) Complete system design
- 2) Factory built headends which contain power supplies, distribution amplifiers, test ports and trunk line connections. These headends are swept, adjusted and tested on actual cable lengths for their particular application. (We have over a mile of hardline cable in various lengths at our test facility and can simulate any actual field condition).
- 3) Very high performance headend and line extender amplifiers designed to cover the **full** range of our frequencies. These amplifiers have automatic gain control (AGC) to cover fluctuations in climate, etc. and have up to 12 dB of tilt adjustment which we vary depending on whether the attenuation expected is tilted (cable) or flat (passive). The amplifiers are set to an automatic gain level of 30 dB. The 24 channel output capability is 52 dBmV at an intermodulation level of less than 40 dB.
- 4) Hardline taps (again designed for the full range [50 MHz to 950 MHz] of our frequencies) with isolation values in 3 dB increments from 8 dB to 36 dB. These taps are in die-cast weatherproof boxes.
- 5) Directional Couplers in isolation values from 6 dB to 36 dB. We normally use these in lieu of splitters and single port taps.
- 6) Taps, splitters, terminators, etc. that are all type accepted to operate properly at our frequencies.
- 7) A 92-page instruction manual that completely describes the proper development, equipment selection and installation of a CTN. A reasonably experienced cable installer with this manual, a TX pre-built headend and some test equipment, can expect to successfully install a major CTN.

"Ramsey also states 'I don't believe we understand, as an industry, what the marketing and selling portion of multiple receiver systems is all about.' Again, John has hit the bullseye. Most TVRO dealers look at shared systems as a way to reduce each unit's cost. Possible?

Maybe, with **low cost** equipment and **marginal** distribution products, but probably not really practical. I would agree with Sandy Wirth, of Delta Satellite, who says in your September 15 article that they should probably share their lawn mower instead. In the same article, Ray Willhoite of Antennas Unlimited, regarding the market for shared systems states 'absolutely no way! Most people do not stay on one

satellite.' The basic point that these people are missing (Ray, you are way off base) is that the prime need for shared systems (or CTN's) is from the folks who live in pocket communities (i.e. mobile home parks, subdivisions, apartments, condominiums, etc.) who are **not serviced by a cable system** and want expanded TV entertainment. They do not want or need to have all that is available from **every** satellite — they only want the same alternatives to network programming that their peers in cabled areas enjoy.

"In your September 15 article, Peter Sutro of MPI Satellite says 'I believe there is potentially a very large business . . . among garden apartment complexes, trailer parks and cluster housing developments which could total several million individual TVRO receiver systems in areas where there is no cable available.' Mr. Sutro has found the key — **'in areas where there is no cable available.'** To take these people out of their second class viewing status is the marketplace. Forget about the cost-sharing concept — forget about where the dish points to — just bring expanded TV choices to people who do not now have that option and the marketing will be easy. Don't try to sell low price cost sharing — good CTN distribution equipment is not cheap, and a complete system including the 'in unit' receiver will cost about \$700-\$900 per available tap or \$1,400-\$1,600 per actual customer. (These are figures based on a typical 100 unit complex with 50% of the units actually being customers).

"I won't try to discuss financing except to say that properly financed the monthly cost to the consumer is considerably less than they would have to pay for 'Cable TV' if cable was available in the area.

"I have a few other comments related to statements made in CSD/2, September 15:

Statement — Miller — Promar, Inc. ' . . . the picture is sparkly or full of lines or it zigzags. Of course, we know the problems are related to interference between receivers.'

Comment — A properly designed distribution system will prevent interference between receivers. High isolation between any given tap and the trunk line using properly designed passive devices takes care of this problem.

Statement — Miller — Promar, Inc. 'I like Anderson's use of the UHF frequency bank so that UHF cable hardware works. I think a loop-thru IF output would also be a good idea . . .'

Comment — Bill has obviously never tried to install a high frequency multi-unit system of any consequence. Existing UHF frequency hardware may work for a small system, but it is so marginal that it becomes untenable in a system of any size. Equipment designed specifically for the distribution of the receiver output signal frequencies is a must for a successful CTN. Loop-through IF output is accomplished externally via the TX line of high frequency taps.

Statement — Willhoite — Antennas Unlimited ' . . . for an installation of this type we install a pair of LNA's . . . and run separate lines for each of the two polarizations; and Cooper — 'If a single LNA/down-converter is used, the system offers all of the transponder channels found on a **single** polarization, alternately two LNA/downconverters can be installed and twin runs of distribution (coaxial) cable can be installed to give all houses connected to the system independent choice from either vertical or horizontal transponder sets. In this case the individual home-outlets have an A/B switch to select the polarization of choice.'

Comment — Bob, I know this is hard for you to accept, but the fact is that **all** of TX's CTN's have been built using a single LNA **cross polarized**. We use a **single** downconverter and a **single** distribution cable. Dual LNA/downconverter and dual distribution cables are simply not necessary. We must, however, in order to provide a picture quality of 'excellent' makeup for the 45 degree LNA-setting signal-loss by using a larger (and/or better) dish than would ordinarily be required in any given geographic areas. The extra cost of using an upgraded dish is more than offset because we use a **single** distribution system. When you are using 1/2" or 3/4" flooded hardline cable (\$.50 ft.), amplifiers in the \$400 range and \$20 passive devices plus the extra LNA and downconverter, the cost of **dual** distribution systems would be excessive. Again, when you spread the cost of using all 'top of the line' distribution equipment over a large number of users, the **per unit cost** is not significantly affected. Someday we hope to get you up to the Northwest so you can see a system with 100+ taps all putting out

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excellent picture quality off a cross polarized LNA with the TX receiver and high quality support hardware. (We just completed two installations on the Aleutian Islands in Alaska at about 174 degrees w longitude. Using a 20 foot ADM and a 60 degree HYTEC LNA, we have good reception off of Galaxy 1).

"As Bill Miller — Promar, Inc. says 'We open up new markets by making equipment which will make sales possible to people who would not have bought; to actually increase the number of people who are watching satellite television.' It is toward this end that the full line of TX products have been developed. We do not compete in the multi-TV single unit or the small multi-unit market. Anderson, Janeil or LoCom are well into that area with equipment that will allow experienced dealers to enter into a brand new marketplace that has an immense potential. **Not all dealers should consider the CTN market.** It requires a certain commitment to learning about signal distribution systems, cable plant construction, financing, and perhaps door-to-door selling. It also requires an investment in some test equipment, but for those who are or become qualified, it offers some very attractive paydays.

"In summary, the technology and equipment are available today for making quality installations of shared antenna systems. It is important to remember that at the level of sophistication provided by TX equipment, the objective is **not to provide people with a low cost TVRO alternative but, rather, to bring expanded television entertainment into the homes of those persons not now serviced by conventional cable TV.** Although TX Engineering is currently the only manufacturer of equipment suitable for CTN's, we hope others will soon enter into this activity so that the full marketplace potential can be developed."

Robert D. Linde
President
TX Engineering, Inc.
P.O. Box 7007
Renton, Wa. 98057
(206/228-0980)

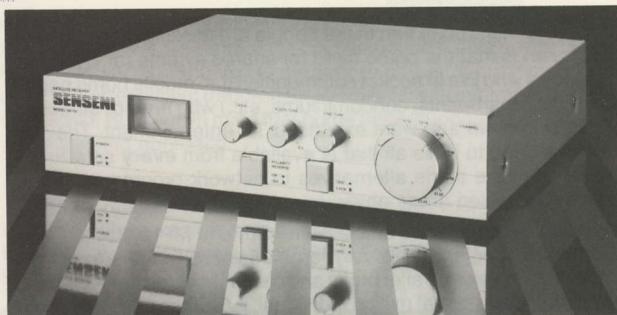
Readers who have differing views are invited, as always, to direct them to our attention for consideration in these pages. Send your thoughts to **CSD/2 Feedback**, P.O. Box 100858, Ft. Lauderdale, Fl. 33310.

NEW Products/ continued from page 6



REMOTE or Receiver Controls + BDC from Regency

SATELLITE TELEVISION TECHNOLOGY, INC. (STS, 2310-12 Millpark Drive, Maryland Heights, Mo. 63043; 314/423-5560) has a pair of receiver announcements. Their Cosima receiver has been 'improved' according to the firm by replacing the continuous tuning with a 12 channel detent tuning knob. A fine tuning control for tuning has also been added. STS has also announced a new receiver; the Sensei. The unit is described as 'having fewer knobs to reduce user confusion.' It has baseband or RF output as well as unclamped video output, uses a SAW filter for receiver selectivity and features detent tuning.



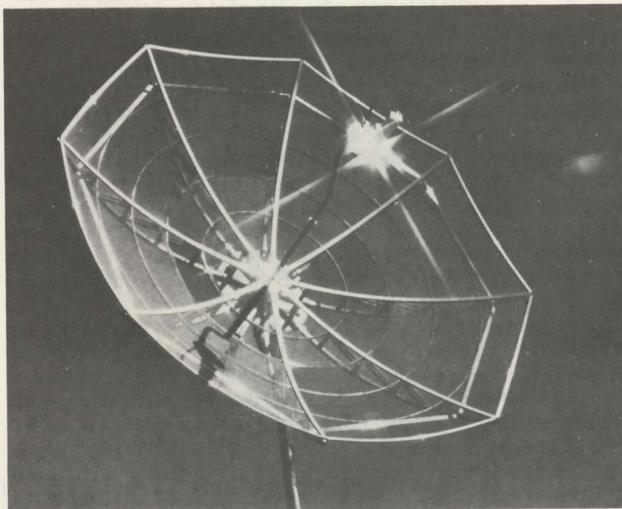
SIMPLISTIC Senseni by STS

SAT-TEC SALES, INC. (2575 Baird Road, Penfield, N.Y. 14526; 716/586-3950) has announced a new (their second) 'Authorized Service Center.' The new facility is located at Mid-tec Communications (Rt. 2, Box 65, Hwy. 14 East, Richland Center, Wisconsin 53581; 608/647-4643) and is operated by Ed Burkhamer who has been in the TVRO business since 1980. Mid-tec will provide service for Sat-Tec products primarily in the midwest and new service centers for Sat-Tec will be announced for other regions of the USA.

WINEGARD COMPANY (3000 Kirkwood Street, Burlington, Iowa 52601; 319/753-0121) has moved into a consumer education program by scheduling national consumer advertising in a number of publications over the coming sixty day period. Multiple-color advertising will appear in **SPORTS ILLUSTRATED** for November 26, December 10 and January 14th; **PEOPLE** magazine for November 26, December 10 and January 7, and **PLAYBOY** Magazine for January. Winegard dealers are being provided with counter-top point-of-sale displays that tie to the national advertising. Winegard was the first firm to advertise consumer television antennas on a national basis (1950s).

ANTENNA Supplier Reports

ALUMTECH, INC. (2810 Lawing Lane, Box 829, Rowlett, Texas 75088; 214/475-4163) has announced their Genisis antenna line designed by Dr. Carl Moody, a 23 year veteran of antenna design. The new antenna line is UPS or truck shippable and comes with a five year limited warranty.



GENESIS 5-Year Protected

CERTIFIED INDUSTRIES, INC. (P.O. Box 435, Cabot, Arkansas 72023; 501/843-7741), a division of ODOM Antennas, has introduced a new series of 10 and 12 foot mesh antennas. The new 'Magnum' antenna series will be produced in a new 25,000 square foot facility now being constructed in Beebe, Arkansas. The expanded aluminum



50%

IS FAILING

CSD/2 is a great publication. It reaches virtually every active TVRO dealer in the United States, AIRmail, in the middle of each month. And it has the shortest editorial 'turn-around' time of any publication in the field; a true 'rapid-delivery-newsletter.' **BUT CSD/2** is only half of the story; for on the 1st of each month there is CSD, the oldest and the original TVRO industry trade publication. **If you are receiving only CSD/2**, you are getting only half the issues of CSD; and far less than half the full information you need to be a 'survivor' in today's TVRO dealer world. CSD/2 is a streamlined version of CSD; the grand-daddy of all TVRO publications. CSD leans heavily on the technical and marketing trends of our industry, concentrating on in-depth reports dealing with everything you need to know to survive in today's TVRO dealer-place. **So we urge you** to get the full story, not just the 50% that comes 'easy' in CSD/2. Place your subscription today using the convenient form below or have your Master/Visacard handy and telephone CSD per the instructions below.

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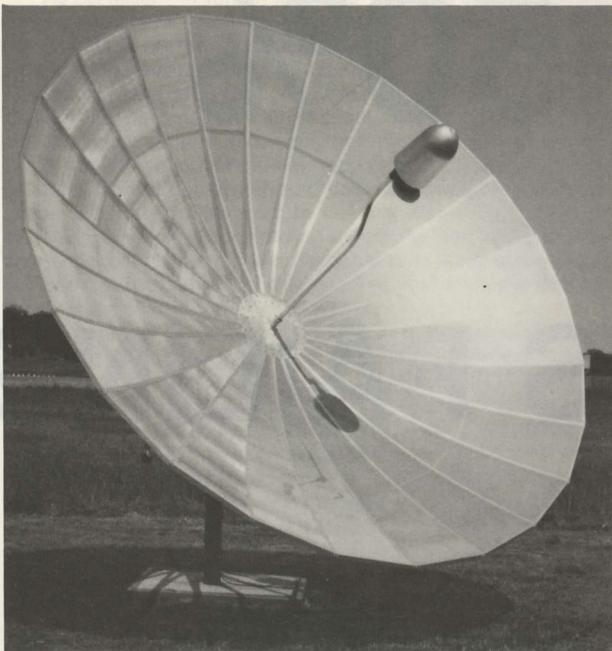
INSTRUCTIONS:

- 1) Complete form if ordering by mail
- 2) Enclose full payment made out to 'CSD Magazine' in US funds
- 3) Mail to: CSD Magazine, P.O. Box 100858, Ft. Lauderdale, Fl. 33310
- 4) **OR:** Have Visa/Mastercharge card handy with card number and expiration date, and telephone 305/771-0505 weekdays between 9 AM and 4 PM eastern time.

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TULSA, OKLAHOMA 74114

mesh antennas are available in silver or black, and were recently range tested in the 70/71% efficiency region. The 10 foot version weighs 115 pounds while the 12 foot version weighs 125 pounds. Reflector panels slide into place with a normal assembly time of two hours.



CERTIFIED/ODOM Is 71% Efficient

CONTINENTAL SATELLITE SYSTEMS, INC. (11485 S.E. Highway 212, Clackamas, Oregon, 97015) recently completed a 'build-your-own' TVRO system day for their 70-plus employees. Each employee was allowed to assemble their own TVRO antenna for their private, home use, as a fringe benefit for working for the firm.

CWY ELECTRONICS (P.O. Box 4519, Lafayette, Indiana 47903;

800/428-7596 or within Indiana, 800/382-7526) has introduced a new one-piece spun aluminum 7'8" TVRO dish with an f/D of .39. Their CSA-8 antenna has a hand operated jack for manual belt tracking, baked enamel (eggshell color) finish, and zinc plated parts. Their target market is CATV systems which are entering our industry to sell, rent or lease home TVRO systems.

ECHOSPHERE CORPORATION (main offices at 1925 West Dartmouth Avenue, Englewood, Co. 80110; 303/761-4782) is now handling the 10.5 foot Raydx (Echo Mesh) antenna. Sections slide together without use of clips or screws and is shipped via UPS in a pair of containers. Multiple antenna colors are available and the antenna uses a buttonhook feed and polar mount. Echosphere has also recently added the Laux Communications Beta-9 antenna, the Wilson RV antenna system, the Wilson 9 foot perforated Airstream, the Odom 10 foot antenna and the 6 foot Janeil antenna.

KAUL-TRONICS, INC. (Route 1, Box 292, Line Rock, Wi. 53556; 800/826-KAUL or 800/826-NOVA within Wisconsin) is now producing a weekly one hour TVRO dealer educational television program. Their 'Video Newsletter' is transmitted on Satcom F4, TR16 each Saturday at 2 PM eastern. Kaul-tronics began using satellite program delivery earlier this year with a two hour special format.

MICRODYNE CORPORATION (P.O. Box 7213, Ocala, Fl. 32672; 904/687-4633) has a new multiple satellite feed (MSF) which can be used on their own (AFC) line of 5 meter professional dishes as well as the Andrew 4.5 meter or Scientific-Atlanta similar-sized dishes. Microdyne reports that the three-satellite feed has a loss of 1 dB when the satellites are located up to 4 degrees off of dish boresight.

MID-TEC COMMUNICATIONS (Rt. 2, Box 65, Highway 14 East, Richland Center, Wisconsin 53581; 608/647-4643), manufacturer of perforated and spun aluminum dishes, has begun to hold in-house seminars for dealers. Antenna assembly and mount installation, dish alignment and tracking, TVRO electronic basics, sales and marketing are covered in the two-day events. Details on next such event from 800/643-8324.

NEW QUAD SYSTEMS (Portland, Oregon) is undergoing 're-organization of its internal operations' with joint-venture partner NPS Industries taking a 'more active role in the daily operation' of the company.

SIGMA SATELLITE MFG. AND SALES, INC. (1115 Hamilton Court, Menlo Park, California 94025; 415/327-5210) has a new 11 foot



CWY's 92" Spun Dish



230 POUNDS of Antenna Power By Sigma

diameter aluminum mesh TVRO antenna. The unitized hub has 42 reflector support ribs with six reflector segments; assembly time is quoted at 45 minutes. The antenna weighs 230 pounds, has polar mount with adjustable declination and conversion from manual to motorized operation. Gain claimed is 40.9 dB.

SYSTEM Accessory Reports

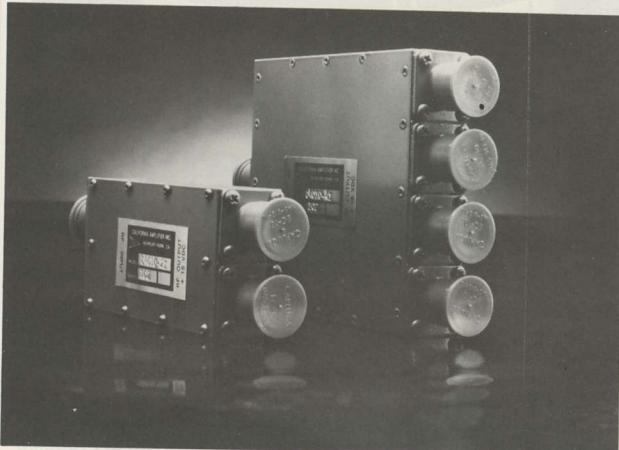
AVCOM (500 Southlake Blvd., Richmond, Va. 23236; 804/794-2500) has introduced their model IPD-65 combining a two-way power divider with ferrite isolation between receivers of up to 65 dB. The IPD-65 has LED indication of powering to the LNA and automatic LNA power switching as well as DC blocking. The system makes it possible for two or more receivers with single conversion circuits to operate without interaction when strapped to a common TVRO antenna system.



NO Interaction From AVCOM

ALAUN ENGINEERING (2303 Florencita Drive, Montrose, California 91020; 818/957-0618) has introduced an 'economical answer' for TVRO system receiver IF filtering in situations where TI (terrestrial interference) is a problem. Their TR6080 fits between the down-converter and the receiver and provides up to 50 dB of 'notch rejection' (centered on 60 and 80 MHz but field adjustable). Another new product, the model ACT (followed by TV channel number) filter allows the user to 'insert' a TV channel from a modulator (such as found in a TVRO receiver) into a broadband MATV distribution (coaxial cable) system and with the tuning ranges provided, the user can reduce or eliminate adjacent channel interference.

CALIFORNIA AMPLIFIER, INC. 3481 Conejo Road, A3, Newbury Park, California 91320; 805/499-8535) has created an 'active two-way solid state power divider' with built-in amplification to overcome signal loss created by the divide-by process. The unit also features RF and DC isolation to eliminate interference between re-



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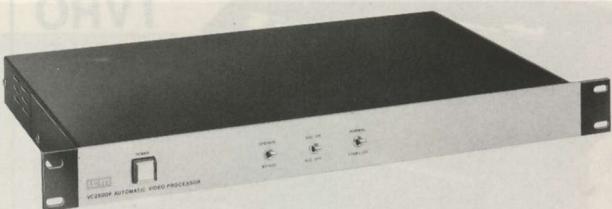
ceivers connected to the same (TVRO) antenna system. Thus DC blocks, power inserters and line amplifiers are eliminated and the unit is powered through the coaxial cable from the receiver. A four-way device is also available.

E.S.P., INC. (2532 Regency Road, Lexington, Ky. 40503; 606/278-1209) has introduced a delay-line filter created to reduce or eliminate TI (terrestrial interference). The manufacturers claim superior interference rejection to notch filter systems and the unit installs between the downconverter and the receiver. An unconditional money back guarantee goes with each unit.



E.S.P./ It Works Or Your Money Back

ICM VIDEO (10 North Lee, Oklahoma City, Oklahoma 73126; 405/232-5808) has a new automatic video processor; model VC-2500P. The unit is completely automatic, regenerating all required video sync signals plus adding video AGC and video clamping. It creates an automatically leveled 1 volt peak-to-peak signal at the output. The system will help CATV/SMATV modulators perform properly and has applications in video taping systems as well.



ICM 2500 Is Automatic Everything

ANTENNA Accessory Reports

HOUSTON TRACKER SYSTEMS (8000 Harwin, Suite 397, Houston, Texas 77036; 713/784-8953) has extended to one year the warranty coverage on all Tracker systems. Both parts and labor are now covered. The increased warranty is reported to be the result of improved product reliability. **Dealers should note** the following **new address** for the firm, effective immediately: 9429 Harwin Drive, Houston, Texas 77036. A new 30,000 square foot facility was recently put on line at this new address.

QUANTUM ASSOCIATES, INC. (Airport Road, Box 21, Alpine, Wyoming 83128; 307/654-7500) has a new Q-7 36 VDC 'Satellite Scanner' motor drive and controller system. The unit has LCD read-out, east and west manual switch, fine tune operation, a 12 position programmable set of stops, digital clock, plus adjustable electronic stops (end limit switches) and fail-safe wiring. A key lock is also included to prevent unauthorized use. Quantum is submitting the unit for UL approval.

VALLEY PRODUCTS CORPORATION (Valley, Nebraska

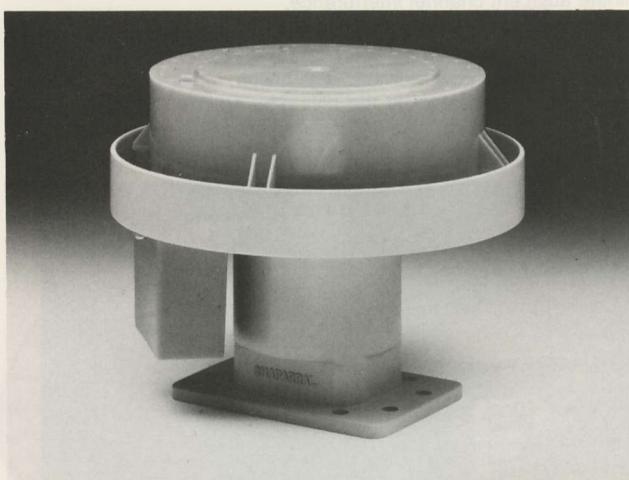
68064; 402/359-5500) has announced their newest product, the SelecTrak-2 antenna positioner. The system was designed to resolve problems associated with (unreliable) rural power systems and has eliminated one of the most common problems associated with positioners in rural areas; microprocessor circuitry. Using rocker switches the user has dedicated memory positions (seven) plus full arc 'sweeping' capability for east and west antenna movements. An optional 'childproof keyswitch' is also available to prevent unauthorized use. The actuator is an 18 incher.

BASIC SYSTEMS (1919 South 129 East Avenue, Tulsa, Oklahoma 74108; 918/437-7066) sold out all of their Model 2140 antenna positioner controls at the Nashville show, and reports they are now 'back in stock' once again. The 2140 is a 'no frills' system using a 36 VDC powering system with a three digit position indication display. Pricing for the controller is 'right'; from \$75 to \$99 depending upon dealer-purchase quantity.



NO FRILLS from Basic Systems

CHAPARRAL COMMUNICATIONS (2360 Bering Drive, San Jose, Ca. 95131; 408/262-2536) began shipping their new Polarotor III unit on November 1st. The new feed unit reduces the size, weight, complexity and cost of the earlier Polarotor devices. It has a new probe design and can function with either in line or straight-through waveguide configurations. It interfaces directly to all Polarotor I controls and provides a 90 degree rotation in approximately 0.5 second time. Complete skew adjustment is retained.



CHAPARRAL Redesigns the Look Of Polarotors

INDUSTRY Personnel

DAVID L. BONDON has joined the team at **Brooks Satellite, Inc.** as the firm's President. Bondon was previously President at Prodelin, Inc.

GUY C. DAVIS, Vice President for Operations for Uniden Cor-

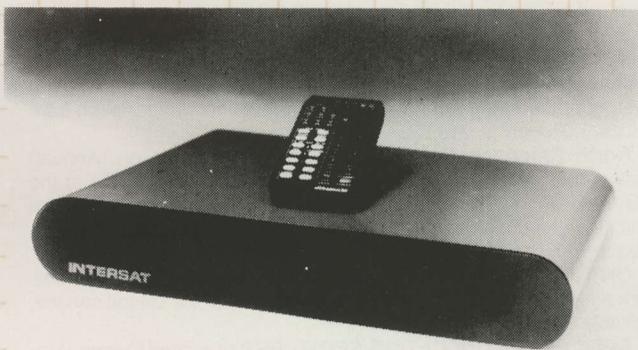
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RFD #2, Harriman Hill Rd., Raymond, NH 03077
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poration of America, resigned his position with the firm late in October. Davis is President of **NASEM**, the industry's 'standards trade association' and he also had been appointed to serve on the Board of Directors of **SPACE** early in August. The Davis seat on the **SPACE** board is actually a 'company seat' and he will be replaced at the Dallas Board of Director's meeting with another Uniden selection. His posture in **NASEM**, as well as his future plans, is unknown.

NANCY A. TURPIN-SHERWOOD has been named Director of Public Relations at **Certified Industries**. Ms. Turpin-Sherwood continues to hold a similar position with sister corporation **Odom Antennas**.

STEVE HUNT has been promoted to Director of Operations for the **Echosphere** operations at their Denver headquarters office. Hunt formerly served as shipping and receiving manager for the firm.

BRAD VON HOLTON of **Horizon Satellite Systems** has been named to the Board of Directors for **SatNet/International Satellite Distributors Association**.

LARRY W. JAMES has been appointed as Executive Vice President for **International Video Communications Corporation**. James came to **IVC** from **Satellite Financial Planning Corporation**.

LARRY LARIMORE has been appointed as Regional Manager for the West Coast for the **Intersat Corporation** of Lake St. Louis, Missouri. Larimore comes to **Intersat** from **Boman**.

LAURA J. BRIDEGAN has been appointed as Staff Executive Assistant for Public Affairs at the **Intersat Corporation**. She comes to the position from a background in newspaper and radio broadcasting.

CLAY NAPPIER has been appointed as Vice President of Sales for **Microwave Systems Marketing** of O'Fallon, Missouri. Nappier previously served as National Sales Manager for the firm.

BOB ESLINGER has been appointed as Product Manager for the **Superwinch** Skywalker antenna actuator product line.

DEALER Advisories

BORESIGHT is a new program slanted at dealers in TVRO and SMATV airing Thursdays at 9 PM eastern on **Satcom F4, TR16**.

A cooperative effort between **SPACE** and **NASEM** (National Association of Satellite Equipment Manufacturers) has been launched. Under the terms of the agreement, **NASEM** and **SPACE** will jointly cooperate for a minimum of six months to establish guidelines for industry technical standards and equipment interfacing. The first meeting of the two groups was held October 15th. Information from Patrick T. Pogue at 918/665-7850.

North American Trade Shows, Inc. plans the Fifth (Annual) Northwest Satellite Trade Conference for August 2, 3 and 4 at the M.G.M. Grand Hotel in Reno, Nevada. Preliminary information on exhibiting and attending available from 1631 N.E. 2nd, Suite A, Bend, Oregon 97701 (503/389-1553).

ON TV is enticing SMATV affiliates with a 25 cent-per subscriber-marketing credit. Copies of the marketing plan, for the D4 fed service, available from 619/485-9880.

SPECTRUM CONSULTING SERVICES has moved to new, larger facilities. Spectrum handles promotion and advertising planning for accounts such as **Superwinch**, **National Satellite Communications**, **Satellite Data (Inc.)**, **Mid-tech Communications**, **U.P./Superior Satellite Dish Manufacturing** and **Viewstar**. Details on Spectrum services from Peter Aucoin at 203/928-0491.

SATELLITE VIDEO SERVICES has released a new dealer training program schedule for dealers in the northeast. Typical sessions are limited to 35 people, are conducted free of charge for attending dealers and advance registration to assure 'seating' is advised.

Basic Installation: Third Saturday of each month, 9:30 AM to 2 PM (dates coming up are November 17, December 15).

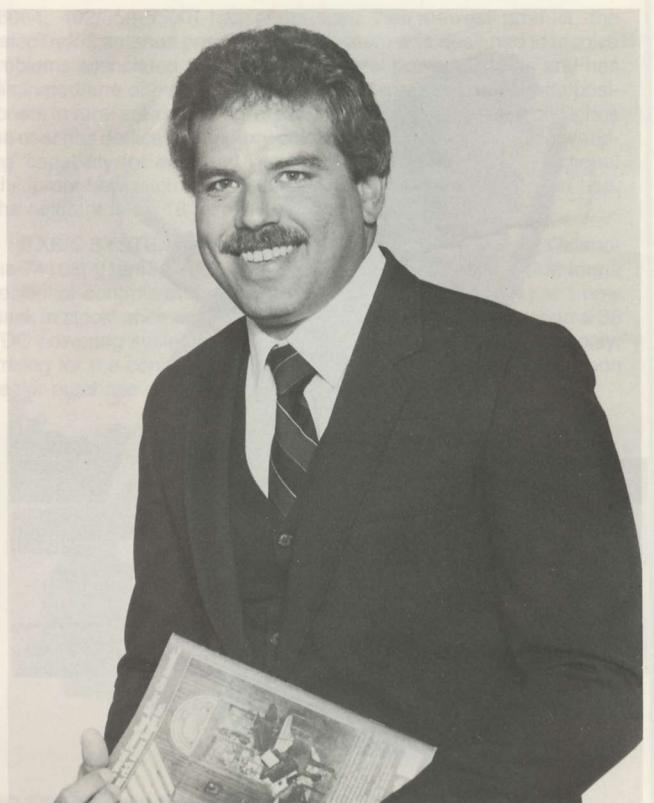
Advanced Technical Installation: Wednesday from 1 to 4 PM (December 5, January 9).

Luxor Drives and Receivers: Wednesday 1 to 4 PM (December 12, January 16).

Block Downconversion/SMATV: Wednesday 1 to 4 PM (November 21, December 19, January 23).

Intersat IQ-160 Technical Training: Wednesday 1 to 4 PM (November 28, January 30).

Information from the firm in Catskill, New York (518/678-9581 or



AUCOIN Pushes Spectrum to New Heights

800-528-DISH outside of New York and 800-831-DISH within New York).

STRATA (Satellite TVRO Retailers and Technician Association) is now publishing **Satellite Signals** for its members. The concept is that members receive a bi-weekly **newspaper** column which dealer members can have placed in their local newspapers over the participating dealer's name. This helps build an image for a professional dealer according to **STRATA**. The trade association also recently conducted their first two-day dealer workshop designed to teach dealers how to repair the equipment they sell. Details from the group at 915/267-3607.

CALENDAR Through December 30th

NOV 16: Board Meeting, TVRO Dealer Board, **SPACE**, Dallas during STTI trade show. Contact Chuck Hewitt at 703/549-6990.

NOV 17: Board Meeting, Master Board of Directors, **SPACE**, Dallas during STTI trade show. Contact Chuck Hewitt at 703/549-6990.

NOV 18/20: STTI Dallas Regional Industry Trade Show; more than 300 exhibit booths pre-sold and **SPACE** Dealer Certification courses (3 planned). Contact STTI at 405/396-2574.

MID-Month Comments/ continued from page 3

marketing group from forming and going to work on the project. We started 1984 planning to sell 600,000 terminals. We will do well to manage half that number by December 31st. Will we repeat in 1985? Will we 'miss the mark' and end up with warehouses loaded with products that did not sell? Now is the time to start planning for 1985; not next November!

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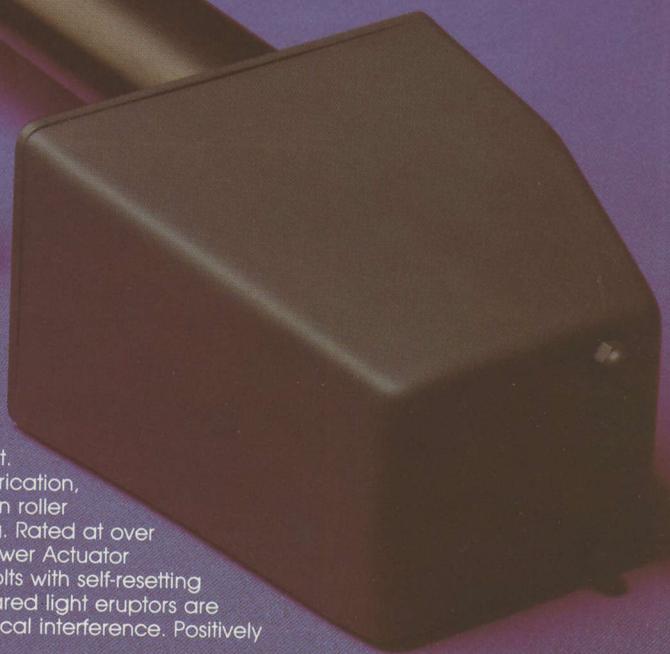
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INFORMATION CONTACT:**

POWER ACTUATOR

Designed and built for satellite dish movement. Sealed tubes, solid lubrication, gimbal rod end, Timken roller bearings, anti-jamming. Rated at over 2000 lbs. The Draco Power Actuator operates at 12 to 36 volts with self-resetting current protection. Infrared light eruptors are impervious to all electrical interference. Positively the best Actuator built.

AIMER III

The complete answer to satellite dish movement and polarotor control. Up to 64 satellite locations with microprocessor accuracy of position and polarotor. Easy to use — simply turn the knob until the satellite reads out and push "GO TO." The Aimer III does the rest. Built-in power supply — low profile — superb styling.



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Grafton, Wisconsin 53024 U.S.A.

Phone: 414-377-0770
Telex: 26886



DISTRIBUTORS: **WISCONSIN:** Delta Satellite Corporation, Cedarburg, WI 414-375-1000, Nat'l 800-558-5582, Wisc. 800-242-2290. **NEW YORK:** Satellite Video Services, Palenville, NY 518-678-9306. **OREGON:** Von's Total Television Center, Eugene, OR 503-342-1618. **OHIO:** Satco U.S.A., New Philadelphia, OH, Nat'l 800-362-8619, Ohio 800-362-6781. **FLORIDA:** United Communications Supply, Tampa, FL 813-971-1648. **UTAH:** Video Link, Salt Lake City, UT 801-278-2878. **TENNESSEE:** Cox Enterprises, Rockwood, TN 615-354-3471. **CANADA:** Ground Control, Concorde, Ontario 416-669-6366. Satellite Systems Ltd., Burnaby, B.C. 604-430-4040. Videosat Canada LTEE, Charney, Quebec 418-832-4621. **TEXAS:** Morgan Satellite Systems, Hughes Spring, TX 214-639-7517.

Don't Try This Stunt At Home.



Mark Fator, photographer

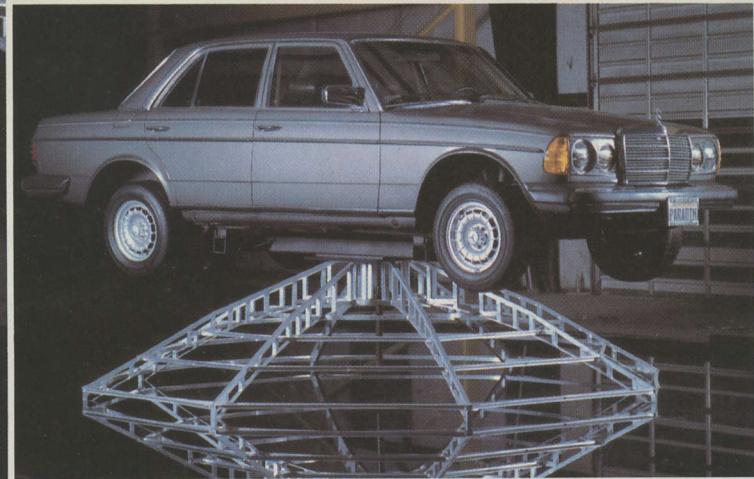
This was fun. It was a lot of work too, but it was fun seeing if we could actually do it.

It began as a little sketch on the margin of a note pad, and after a great deal of thought and a huge amount of convincing — Mike loaned us his car.

We parked a real live Mercedes-Benz 300D on top of an absolutely box-stock Paraclipse antenna.

The 3.8 meter Paraclipse was assembled meshless and placed face down in a shallow pool of water. We fabricated a special steel H-shaped

rack to provide a flat surface at the balance point. The car's forward weight bias was counter-balanced with 300 pounds of steel plate in the trunk.



The total dead weight was 4,522 pounds. Total deflection under load was 1 inch and when the whole ordeal was over, the hub plate was only .45" closer to the floor than before.

Last year, during a "destruction test," we dropped 5,200 pounds of steel stock on the same antenna; so we weren't really surprised when this stunt worked.

What does it prove? Just one thing: We build a very, very strong antenna.

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Paraclipse

HIGH PERFORMANCE
SATELLITE TELEVISION SYSTEM

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